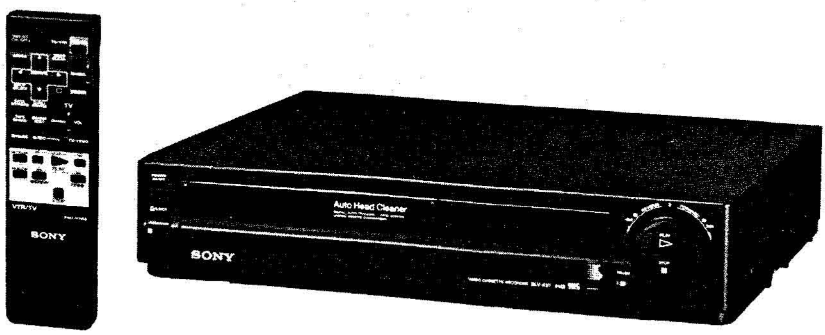
# SLV-426EE/X57ME/X57PS
## RMT-V116A

# SERVICE MANUAL

*East European Model*
*SLV-426EE*

*ME Model*
*SLV-X57ME.*

*E Model*
*SLV-X57PS*



Remote commander is available as a unit. But as individual parts the battery case lid of commander is only avaiable.

- Refer to the SERVICE MANUAL of VHS MECHANICAL ADJUSTMENTS Ⅲ for MECHANICAL ADJUSTMENTS. (9-973-211-11)

## SPECIFICATIONS

**System**

| | |
|---|---|
| Channel coverage | PAL B/G, SECAM B/G:<br>VHF channels 2 to 12, S01 to S05, S1 to S20<br>UHF channels 21 to 69<br>SECAM D/K:<br>VHF channels R1 to R12<br>UHF channels 21 to 69<br>PAL D/K:<br>VHF channels C1 to C12<br>UHF channels C13 to C57 |
| RF output signal | UHF channels 30 to 39 |
| Aerial out | 75-ohm asymmetrical aerial socket |

**Inputs and outputs**

| | |
|---|---|
| LINE IN | VIDEO IN (phono jack) (1)<br>Input signal: 1 Vp-p, 75 ohms, unbalanced, sync negative<br>AUDIO IN (phono jack) (1)<br>Input level: –7.5 dBs<br>(0 dBs = 0.775 Vrms)<br>Input impedance: more than 47 kilohms |
| LINE OUT | VIDEO OUT (phono jack) (1)<br>Output signal: 1 Vp-p, 75 ohms, unbalanced, sync negative<br>AUDIO OUT (phono jack) (1)<br>Rated output level: –7.5 dBs at load<br>Impedance: 47 kilohms<br>Output impedance: less than 10 kilohms |

**General**

| | |
|---|---|
| Power requirements | 220-240 V AC, 50 Hz (ME/PS Model)<br>110-240 V AC, 50/60Hz (EE Model) |
| Power consumption | 20 W |
| Operating temperature range | 5° C to 40° C (41° F to 104° F) |
| Storage temperature range | –20° C to 60° C (–4° F to 140° F) |
| Dimensions | 430 x 91 x 348 mm (w/h/d)<br>(17 x 3 1/2 x 14 3/8 inches)<br>including projecting parts and controls |
| Weight | 5.4 kg (12 lb 9 oz) |

**Accessories supplied**

Wireless Remote Commander (1)
R6 (size AA) batteries (2)
Aerial cable (1)
AC power cord (1)
Screwdriver for RF channel adjustment (1)

**Note**

This appliance conforms with EEC Directive 87/308/EEC regarding interference suppression.

Design and specifications are subject to change without notice.

MICROFILM

## VIDEO CASSETTE RECORDER

SONY®

## SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly-soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are "pinched" or contact high-wattage resistors.
3. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
4. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
5. Check the B+ voltage to see it is at the values specified.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

V13252

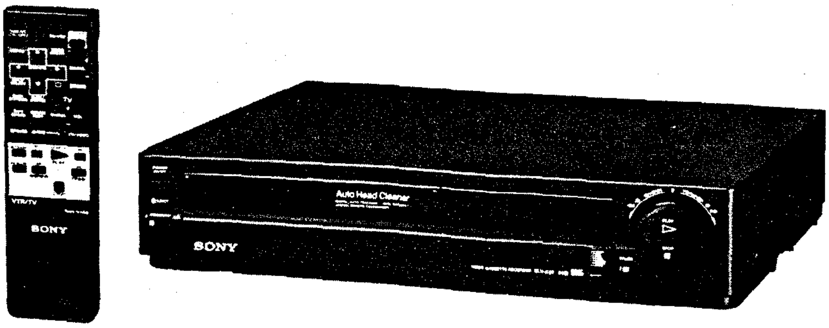
# SLV-426EE

# SERVICE MANUAL

*East European Model*
*SLV-426EE*

*ME Model*
*SLV-X57ME*

*E Model*
*SLV-X57PS*



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# SECTION 1
# GENERAL

**This section is extracted from instruction manual.**

Chapter 2 - Getting Started

## Connecting Peripheral Equipment

### Checking Your TV Connections

Whenever you view video pictures as well as TV programs on your TV screen, connect the VTR and your TV properly. The connection between the VTR and TV varies depending upon the type of your TV receiver and aerial.
First check the type of your TV, and use the appropriate instructions in this section.

Before making connections do the following

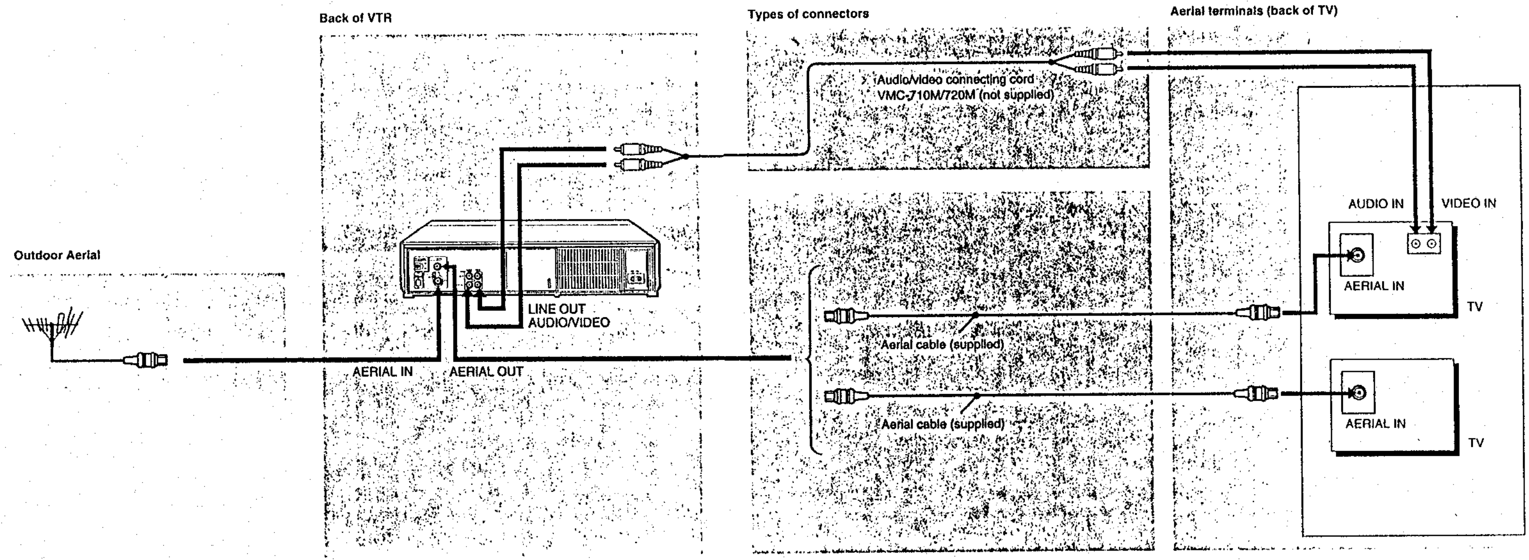
- Turn off the power to the VTR and the TV.
- Do not connect the AC power cords until all of the connections are completed.
- Make sure that all connections are firm. Loose connections may cause picture distortion.
- If your TV does not match the following examples, consult your nearest Sony dealer or qualified technician.

**1** Disconnect the aerial from the aerial terminal of your TV.

**2** Attach the connector to the AERIAL IN terminal on the back of the VTR. Make sure your TV has audio/video input jacks if you attach the audio/video connecting cord to the AUDIO/VIDEO output jacks on the VTR.

**3** Find the type of aerial terminals or audio/video jacks you have on the back of your TV (see the illustration under step 4). Attach the connector(s) you are using (see the illustration below) to the back of the VTR (see the illustration under step 2).

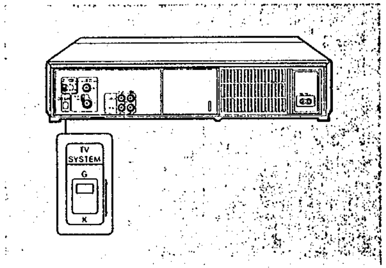
**4** Attach the other end of the connector(s) to the back of the TV.


Outdoor Aerial
Back of VTR
LINE OUT
AUDIO/VIDEO
AERIAL IN
AERIAL OUT
Types of connectors
Audio/video connecting cord
VMC-710M/720M (not supplied)
Aerial cable (supplied)
Aerial cable (supplied)
Aerial terminals (back of TV)
AUDIO IN
VIDEO IN
AERIAL IN
TV
AERIAL IN
TV

# Connecting Peripheral Equipment

## Selecting the TV System

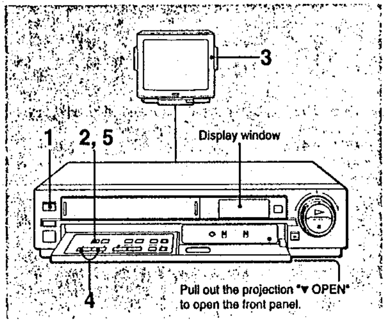
You must set the TV SYSTEM selector at the rear of the VTR correctly so that your TV can receive the correct signal from your VTR.
Set the selector to either: G: PAL G or SECAM G system or K: PAL K or SECAM K system.



**Note:**
The sound is distorted if the TV SYSTEM output selector is set to the wrong position.

## Tuning the VTR to Your TV

If you have connected your VTR and TV using only the aerial sockets, you have to adjust one of the television programme positions to receive the VTR's playback signals. If the TV/VTR connection is made using the audio/video input and output jacks, skip this procedure.



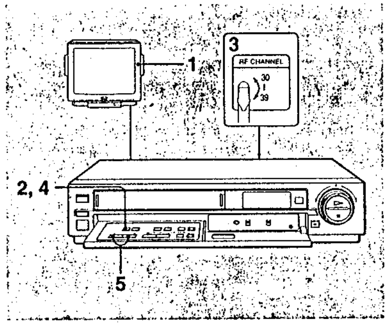
Pull out the projection "▼ OPEN" to open the front panel.

1. Press ON/STANDBY to turn on the VTR.
2. Press INPUT SELECT to light LINE in the display window.
3. Turn on the TV and select the UHF channel 32.
   The VTR is preset at the factory so that it outputs the UHF channel 32 band signal to the TV.
   If the UHF channel 32 is used in your area, readjust the programme position for the VTR as described in "When the UHF channel 32 is used" on page 7.
4. Tune the TV so that a blue screen with the tape counter indication is displayed on the TV screen.
5. Press INPUT SELECT so that the programme number appears in the display window.
6. Press PROGRAM +/– to check to see if the TV screen changes to a different programme.

Now you have tuned your TV to receive the VTR's playback picture. When you play back a cassette, set the TV to the programme position selected above.

## When the UHF Channel 32 is Used

Readjust the programme position for the VTR.



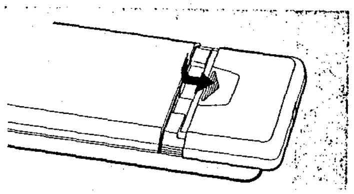
1. Select a programme position on the TV between UHF channels 30 and 39, where the TV displays no picture and a rustling sound or where no sound is heard at all.
2. Press INPUT SELECT to light LINE in the display window.
3. Turn the RF CHANNEL screw with the supplied screwdriver to the position where the TV clearly displays a blue screen with the tape counter.
4. Press INPUT SELECT so that the programme number appears in the display window.
5. Press PROGRAM +/– to check to see if the TV screen changes to a different programme.

**If the TV signal is too strong**
Set the LOCAL/DX switch at the rear of the VTR to LOCAL with a screwdriver.
Normally set this switch to DX.

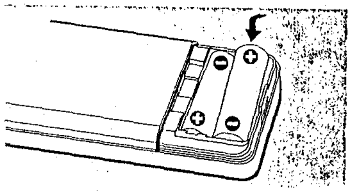
# Preparing the Remote Commander

## Inserting Batteries

**1** Slide open and remove the cover.



**2** Insert two R6 (size AA) batteries so that the + and – polarities match the polarity diagrams inside the battery compartment.



**3** Replace and close the cover.

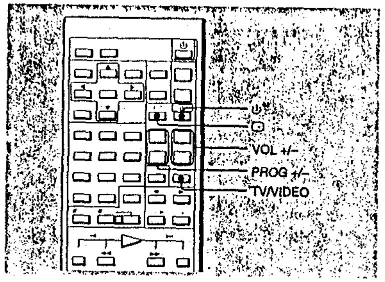
**Note:**
With normal operation, batteries last for approximately six months. If the Remote Commander will not be used for an extended period of time, remove the batteries to avoid possible damage from battery leakage.

## How to Use the Remote Commander

When you operate the VTR using the Remote Commander, point it at the remote sensor located on the VTR. For the location of the remote sensor, see "Identifying Parts and Controls" on page 27.

## How to Control Your TV with the Remote Commander

This Remote Commander can also control your Sony TV with the ▣ mark. Buttons used to control the TV are shown below.

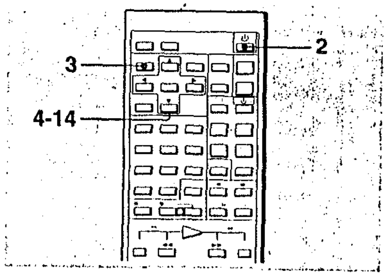


| | |
|---|---|
| ⏻: | Press to turn the power of the TV on and off. |
| ▢: | If the power of the TV is not turned on by pressing ⏻, press this button to turn it on. |
| VOL +/–: | Press to increase (+) or decrease (–) the volume of the TV. |
| TV/VIDEO: | Press to select the input of the TV: TV programme broadcasts from the aerial or playback signal from the VTR. |
| PROG +/–: | Press to change the programme position of the TV. |

# Setting the Time and Date Clock

*You can set the VTR time and date clock on the TV screen using the Remote Commander.*

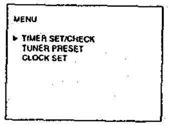
## Example: To set to 15:30, 27th November, 1992



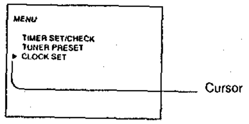
**1** Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

**2** Press ⏻ to turn on the VTR.

**3** Press MENU.
The main MENU appears on the TV screen.

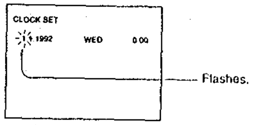


**4** Press ▲ or ▼ to move the cursor (▶) to CLOCK SET.



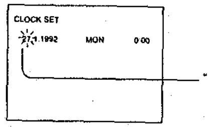
Cursor

**5** Press EXECUTE.
"1.1.1992 WED 0:00" appears.
The leftmost "1", in the "day" position, is flashing.



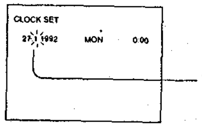
Flashes.

**6** Press ▲ or ▼ until "27" appears in the day position.
The day of the week is set automatically.



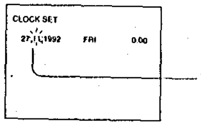
"27" flashes.

**7** Press ▶ to make the "month" position flash.



"Month" position.

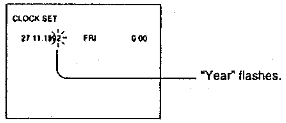
**8** Press ▲ or ▼ until "11" appears in the month position.



"11" flashes.

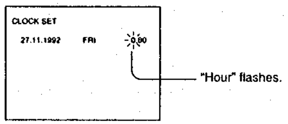
(Continued)

9 Press ▶ to make the "year" position flash.
If you want to change the year, press ▲ or ▼.


CLOCK SET
27.11.1992 FRI 0:00

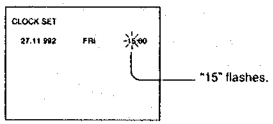
"Year" flashes.

10 Press ▶ to make the "hour" flash.


CLOCK SET
27.11.1992 FRI 0:00

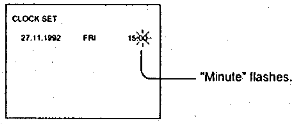
"Hour" flashes.

11 Press ▲ or ▼ until "15" appears in the hour position.


CLOCK SET
27.11.1992 FRI 15:00

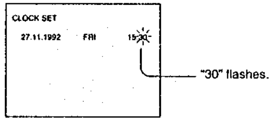
"15" flashes.

12 Press ▶ to make the "minute" flash.


CLOCK SET
27.11.1992 FRI 15:00

"Minute" flashes.

13 Press ▲ or ▼ until "30" appears in the minute position.


CLOCK SET
27.11.1992 FRI 15:30

"30" flashes.

14 Press EXECUTE.
The clock is set to 15:30.

## To Recall the Time and Date on Screen

Press MENU to display the main MENU, select CLOCK SET and press EXECUTE. To return to the original screen, press MENU.

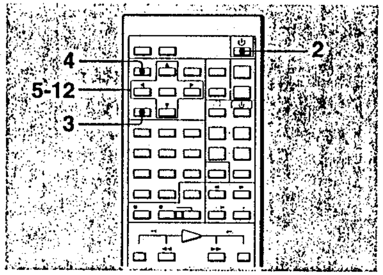
**Notes:**

- You can set the clock except during timer recording, timer recording standby, and quick-timer recording.
- When the time and date are displayed, the clock keeps running as long as no changes are made. The seconds are not reset to 00 when you return to the original screen.

# Presetting the Active Channels

*To watch and record TV programmes, you must preset the channels on the VTR using the PROG +/– buttons.*
*You can preset the preferred channels using the Remote Commander and the TUNER PRESET display.*

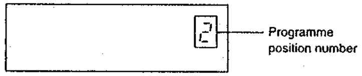
## Presetting Desired Channels



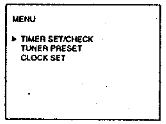
1 Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

2 Press ⏻ to turn on the VTR.

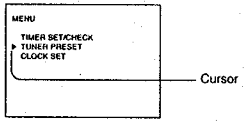
3 Press INPUT SELECT so that the programme position number appears in the display window.



4 Press MENU.
The main MENU appears on the TV screen.

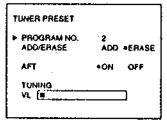

MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET

5 Press ▲ or ▼ to move the cursor (▶) to TUNER PRESET.

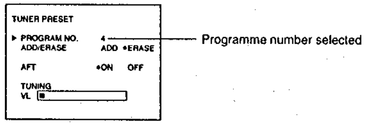

MENU
TIMER SET/CHECK
▶ TUNER PRESET
CLOCK SET

Cursor

6 Press EXECUTE.
The TUNER PRESET display appears.

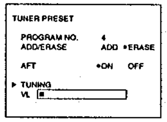

TUNER PRESET
▶ PROGRAM NO. 2
ADD/ERASE ADD •ERASE
AFT •ON OFF
TUNING
VL

7 Press ◀ or ▶ to select the desired programme position number.


TUNER PRESET
▶ PROGRAM NO. 4
ADD/ERASE ADD •ERASE
AFT •ON OFF
TUNING
VL

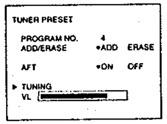
Programme number selected

8 Press ▲ or ▼ to move the cursor to TUNING.


TUNER PRESET
PROGRAM NO. 4
ADD/ERASE ADD •ERASE
AFT •ON OFF
▶ TUNING
VL

*(Continued)*

9 Press ◀ or ▶ to tune in the desired channel.
The picture appears when the first channel received in your area is detected, and the channel is preset to the selected programme position.
If ERASE has been selected, ADD/ERASE is switched to ADD automatically, and the screen returns to the blue background after an interval of 5 seconds.



```
TUNER PRESET

  PROGRAM NO.      4
  ADD/ERASE        •ADD   ERASE

  AFT              •ON    OFF

▶ TUNING
  VL
```

10 If the channel detected in step 9 is not the desired one, press ◀ or ▶ until the picture of the desired channel appears.

**Note:**
When you keep ◀ or ▶ pressed, the channels are scanned in the following order:

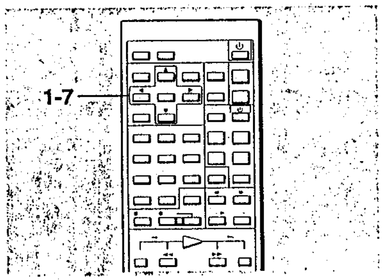
| Band Indicator | Corresponding channels | | |
|---|---|---|---|
| | **PAL B/G<br>SECAM B/G** | **PAL D/K** | **SECAM D/K** |
| VL<br>(VHF low) | VHF 2 to 4<br>S01 to S05,<br>S1 | VHF C1 to C5 | VHF R1 to R5 |
| VH<br>(VHF high) | VHF 5 to 12<br>S2 to S20 | VHF C6 to C12 | VHF R6 to R12 |
| U (UHF) | UHF 21 to 69 | UHF C13 to C57 | UHF 21 to 69 |

11 Press ▲ to move the cursor to PROGRAM NO., and repeat steps 7 to 10 to preset other channels.

12 Press EXECUTE when all the desired channels have been preset.
The display returns to the original screen with the tape counter.

**Note:**
The numbered buttons on the Remote Commander can also be used to enter programme position numbers.
The -/-- (10's digit) button can be used to select a programme position number over 9.
For example, to select 23, first press -/--, then 2 and 3.

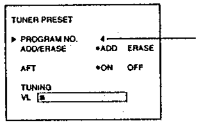
## Disabling Unwanted Programme Positions



1 Call up the TUNER PRESET menu on the TV screen.
Follow steps 4 to 6 in "Presetting Desired Channels" on page 11.

2 Press ▲ or ▼ to move the cursor (▶) to PROGRAM NO.

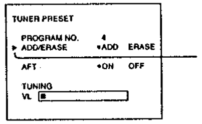
3 Press ◀ or ▶ to select the programme position number to be disabled.



```
TUNER PRESET

▶ PROGRAM NO.      4
  ADD/ERASE        •ADD   ERASE

  AFT              •ON    OFF

  TUNING
  VL
```

Programme position to be disabled.

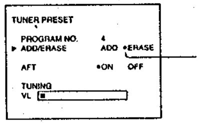
4 Press ▲ or ▼ to move the cursor to ADD/ERASE.



```
TUNER PRESET

  PROGRAM NO.      4
▶ ADD/ERASE        •ADD   ERASE

  AFT              •ON    OFF

  TUNING
  VL
```

Cursor

5 Press ▶ to move the dot (•) to ERASE.



```
TUNER PRESET

  PROGRAM NO.      4
▶ ADD/ERASE        ADD    •ERASE

  AFT              •ON    OFF

  TUNING
  VL
```

Dot

6 Repeat steps 2 to 5 to disable other programme positions.

7 Press EXECUTE.
When pressing PROG +/–, the disabled programme positions are skipped.

**To reactivate a disabled programme position**
Select ADD instead of ERASE in step 5 above.

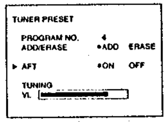
## Fine-tuning

*Leave the Auto Fine Tuning (AFT) set to ON, and the AFT function fine-tunes the picture. If the picture quality of a particular programme position is unacceptable, fine-tune it manually using the following procedure.*

1 Select the programme position to be fine-tuned with PROG +/–.

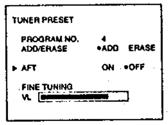
2 Display the TUNER PRESET menu referring to steps 4 to 6 in "Presetting Desired Channels" on page 11.

3 Press ▲ or ▼ to move the cursor (▶) to AFT.



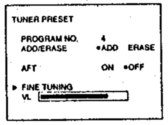
```
TUNER PRESET

  PROGRAM NO.      4
  ADD/ERASE        •ADD   ERASE

▶ AFT              •ON    OFF

  TUNING
  VL
```

4 Press ▶ to move the dot (•) to OFF.
FINE TUNING appears.



```
TUNER PRESET

  PROGRAM NO.      4
  ADD/ERASE        •ADD   ERASE

▶ AFT              ON     •OFF

  FINE TUNING
  VL
```

5 Press ▲ or ▼ to move the cursor to FINE TUNING.
The picture appears.



```
TUNER PRESET

  PROGRAM NO.      4
  ADD/ERASE        •ADD   ERASE

  AFT              ON     •OFF

▶ FINE TUNING
  VL
```

6 Press ◀ or ▶ until you get the best picture.

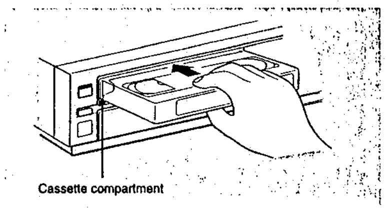
**If you are still unable to get a better picture**
Press ▲ to move the cursor to AFT, and press ◀ to move the dot (•) to ON.

7 Press EXECUTE.

Chapter 3 - Basic Operations

# Playback

## Inserting a Video Cassette

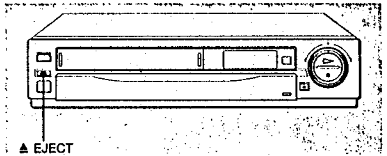


**1** Insert a video cassette as shown above.

**2** Gently press the center of the front side of the cassette until the mechanism draws it into the compartment. When the cassette has been loaded, the cassette indicator (▭) lights in the display window and the VTR turns on automatically.

**Note:**
If you insert a cassette without a safety tab, playback starts automatically (AUTO PLAYBACK function).

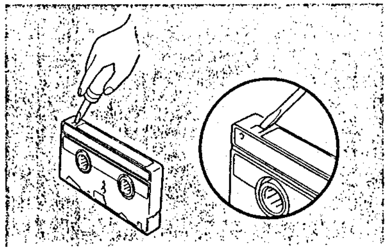
## Ejecting the Video Cassette



Press ≜ EJECT on the VTR.
You can eject the cassette even when the power is off, so long as the AC power cord is plugged into the wall outlet. When you press ≜ EJECT, the power is turned on. After ejecting the cassette, the power automatically shuts off.

## Protecting Your Cassette against Accidental Erasure

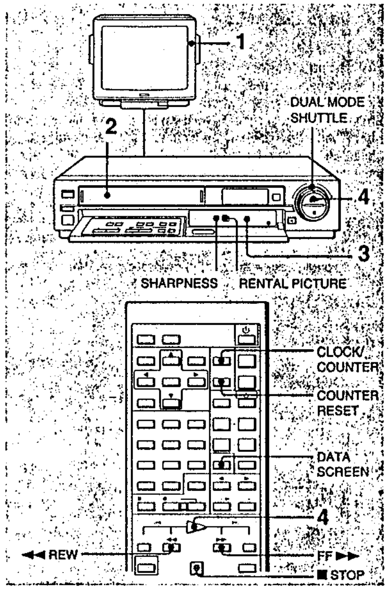
Cassettes have a safety tab to protect against accidental recording.
Break off the safety tab with a screwdriver or other tool.
If the safety tab is removed, the cassette is ejected when you try to record on it.



To record on a cassette with the safety tab broken off, simply cover the tab hole with adhesive tape.

## Playing Back a Cassette

*Before playing back a cassette, check that all the connections are firm and made correctly.*



**1** Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

**2** Insert a cassette.
The VTR turns on automatically.

**3** Set the COLOR SYSTEM on the VTR to conform to the colour system of the cassette to be played back:

| Colour system | Selector position |
|---|---|
| PAL, ME SECAM | PAL/MESECAM |
| NTSC | NTSC PB ON PAL TV or NTSC 4.43* |

* If the playback picture is not clearly displayed on the screen, select the NTSC 4.43 position.

**4** Press ► PLAY.
Playback begins.
When the tape reaches the end, the VTR automatically rewinds the tape to the beginning (auto rewind). The power of the VTR remains ON.

**To stop playback**
Press ■ STOP.

**To stop playback for a moment**
Press II PAUSE.
Press II PAUSE again to resume playback.

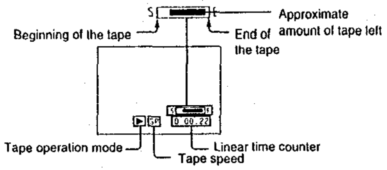
**To fast-forward the cassette during stop mode**
Press ■ STOP, and turn the DUAL MODE SHUTTLE ring on the VTR clockwise (►►), or press FF ►► on the Remote Commander.

**To rewind the cassette**
Press ■ STOP, and turn the DUAL MODE SHUTTLE ring on the VTR counterclockwise (◄◄), or press ◄◄ REW on the Remote Commander.

**To start playback automatically after rewinding the cassette**
Turn the DUAL MODE SHUTTLE ring on the VTR counterclockwise (◄◄).
While holding the ring, press ► PLAY on the VTR.
During rewind, the AUTO indicator lights up in the display window.

**Notes:**
- When you play back a cassette recorded in the NTSC colour system, note that the following occurs:
  - The data screen does not appear on the screen, even if you press the DATA SCREEN button.
  - The picture may go black and white, shake or shrink a bit. It depends on the TV you have.
  - When you rewind or advance the tape after you have played it, the VTR may not run smoothly, since it takes a while for the VTR to count the length of tape left before rewinding or advancing the tape.
- When the PAL and NTSC colour systems are mixed on a tape, the counter does not show the exact counting, since each colour system has a different counting cycle.

**About the Data Screen**
The data screen appears automatically. To turn off the data screen, press DATA SCREEN.



**Notes:**
- The remaining tape length displayed is approximate. Therefore, use it only as an approximate reference.
- When you insert a short video cassette tape such as an E-30 or non-standard commercially available video cassette tape, the remaining tape length indicator may not function correctly.
- The data screen can only be called up when in normal playback mode.

## Resetting the Tape Counter

The tape counter in the display window helps you to locate a certain scene after playback. Press COUNTER RESET on the Remote Commander to set the counter to the "0H00M00S" (counter zero) position before playing back the tape (the tape counter is automatically reset to zero whenever a cassette is inserted.) The VTR keeps counting the length of the tape being played back. Note, however, that the tape counter does not count the positions without video signals recorded.

**Note:**
If the display window shows the current clock, not the tape counter, press CLOCK/COUNTER on the Remote Commander to switch the display to tape counter.

## Enhancing Picture Quality

**To reduce streaks and/or snow**
Select RENTAL PICTURE on the VTR.

**To adjust the sharpness of the picture**
Turn SHARPNESS control on the VTR to SHARP for a sharper picture or to SOFT for a softer picture.

**To adjust tracking**
Normally you can get optimum tracking since the auto tracking function activates in the following cases:
- when the cassette is loaded for the first time.
- when the picture is distorted by scratches on the tape.
- when the AUTO TRACKING indicator is turned on by pressing TRACKING AUTO/MANUAL after the picture is adjusted manually.

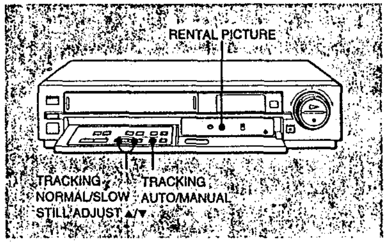
The AUTO TRACKING indicator flashes while the VTR is searching for the best tracking condition, and lights when the best possible playback picture is obtained.

AUTO TRACKING
Flashes.

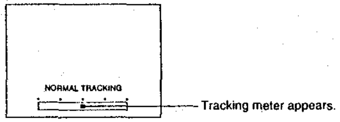
### Auto head cleaner
The auto head cleaner built into the VTR automatically cleans the video heads when a cassette is loaded or unloaded. If the effect of head cleaning is not sufficient even after a cassette has been loaded/unloaded several times, clean the heads using the Sony T-25CL video head cleaning cassette.

## Playing Back a Cassette Recorded on another VTR

When playing back a cassette recorded on another VTR, the tracking condition is automatically adjusted. You can also adjust the tracking condition and the sharpness manually according to the following instructions.



### To adjust tracking manually
Press either ▲ or ▼ for the best possible picture. The tracking meter appears on the TV screen and the AUTO TRACKING indicator turns off.
When manual adjustment proves unsatisfactory, press both of the TRACKING NORMAL/SLOW and STILL ADJUST.
The tracking condition indicator returns to the centre position.



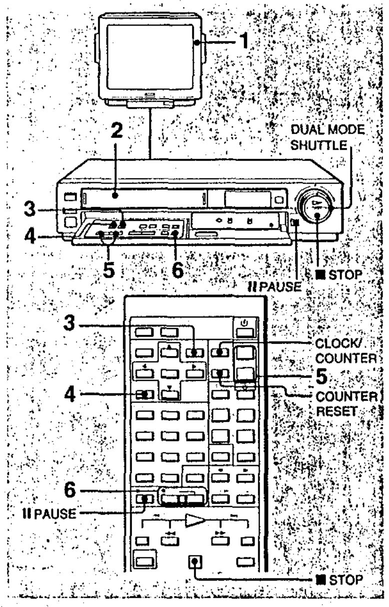
### To return to the auto tracking adjustment
Press TRACKING AUTO/MANUAL.

### To reduce playback streaks and/or snow
Select RENTAL PICTURE on the VTR.

# Recording

*This section shows you how to record TV programmes. You can also watch a TV programme on the TV screen while recording another.*
*Before recording, check to see that all the connections have been made correctly.*

## Recording TV Programmes



1 Turn on the TV.
If your TV is connected to both AERIAL OUT and LINE OUT of the VTR:
Select the input from the VTR.
If your TV is connected only to the AERIAL OUT of the VTR:
Select the programme position for the VTR. This should be the same position as that selected on page 6.

2 Insert the cassette.
The VTR turns on automatically.

3 Press TAPE SPEED to select the recording tape speed, SP or LP.

4 Press INPUT SELECT to light the programme position number indicator in the display window.

5 Select the programme position to be recorded with PROG +/– (or PROGRAM +/– on the VTR).

6 Press the two ● REC buttons on the Remote Commander simultaneously, or the ● REC button on the VTR.
Recording starts.
When the tape reaches the end, the VTR automatically rewinds the tape, and the power remains on.

**To pause recording**
Press II PAUSE.

**To stop recording**
Press ■ STOP.

**To turn off the data screen information**
Press DATA SCREEN on the Remote Commander.
To display it again, press DATA SCREEN.
Data screen information is not recorded on the tape.

**The remaining tape length indicator**
- The remaining tape length shows the approximate length of tape left.
- When you insert a short tape such as an E-30 or a non-standard commercially available tape, the remaining tape length indicator may not function correctly.

## Maximum Recording Time of a Cassette

Recording in either the SP or LP mode is possible with this VTR. Maximum recording/playback time is listed in the table below.

| Cassette Tape | Recording/Playback time | |
|---|---|---|
| | SP mode | LP mode |
| E-240 | 4 hr. | 8 hr. |
| E-180 | 3 hr. | 6 hr. |
| E-120 | 2 hr. | 4 hr. |
| E-60 | 1 hr. | 2 hr. |

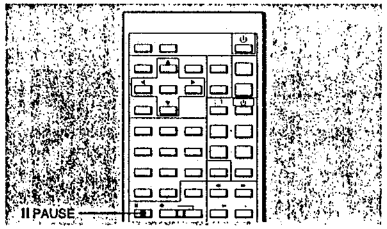
## Watching One Programme While Recording Another

Select the programme you want to watch on the TV.

**If you use a colour monitor**
You cannot watch another programme during recording unless the monitor has an internal TV tuner.

## Editing Out Unwanted Scenes

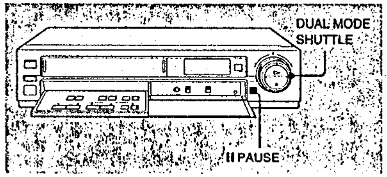
### While recording



1 Press II PAUSE when an unwanted scene appears.
Recording stops.

2 Press II PAUSE again to resume recording at the desired scene.

### By recording over unwanted scenes


DUAL MODE SHUTTLE
II PAUSE

1 Press II PAUSE when an unwanted scene appears.
Recording stops.

2 Turn the DUAL MODE SHUTTLE ring on the VTR counterclockwise and search for the point from which you wish to continue recording.

3 Release the DUAL MODE SHUTTLE ring at the desired point.
After an instant of still mode, the VTR automatically enters the recording pause mode.

4 Press II PAUSE to resume recording at the desired scene.

**Note:**
When the recording pause mode lasts for approximately 5 minutes or more, the VTR enters the stop mode.

# Timer Recording

*The Timer Recording function allows you to preset your VTR to record up to eight programmes within a one-month period. You perform this procedure from the TIMER SET/CHECK screen on your TV.*

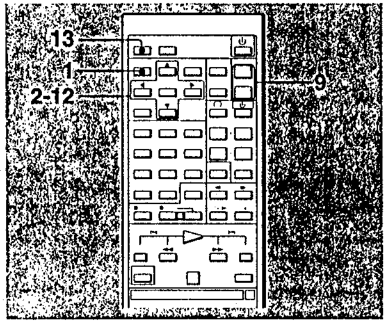
### As a First Step

Before setting the timer, make sure that:

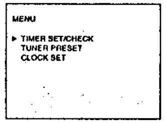
- the time and date clock is set correctly. (See "Setting the Time and Date Clock" on page 9.)
- the cassette is long enough to record all the programmes.
- the safety tab on the cassette is intact. If you insert a cassette with no safety tab and press TIMER REC (ON/OFF), the cassette is automatically ejected from the VTR.
- the VTR and the TV are both turned on.

## Setting the Timer

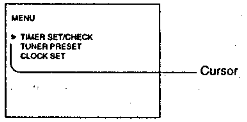
**Example:**
Here's how to record a programme broadcast on programme position 26 from 20:00 to 21:55 on Friday, 27th November, 1992.



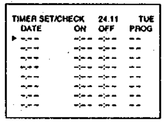
1 Press MENU.
The main MENU appears.


MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET

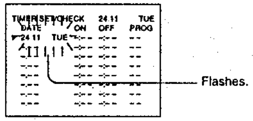
2 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.


MENU
▶ TIMER SET/CHECK
TUNER PRESET
CLOCK SET
Cursor

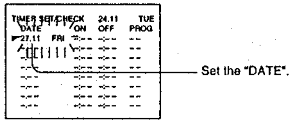
3 Press EXECUTE.
The TIMER SET/CHECK display appears on the screen.
To reset the clock, refer to "Setting the Time and Date Clock" (page 9).


TIMER SET/CHECK 24.11 TUE
DATE ON OFF PROG

4 Press ▶ to make sure that today's date is flashing. If it isn't, reset the clock to the correct time. See "Setting the Time and Date Clock" (page 9).

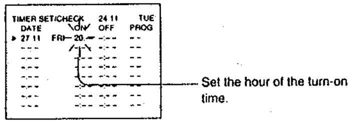

TIMER SET/CHECK 24.11 TUE
DATE ON OFF PROG
24.11 TUE
Flashes.

5 Press ▲ to set the month and date to 27.11 FRI.
The day of the week is automatically set.

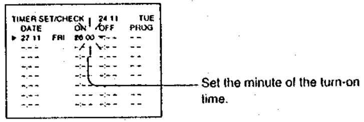

TIMER SET/CHECK 24.11 TUE
DATE ON OFF PROG
27.11 FRI
Set the "DATE".

(Continued)

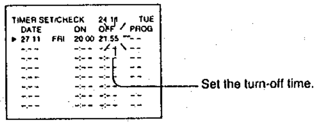
**6** Press ▶ to make the hour section under "ON" flash and then ▲ or ▼ until "20" appears.


TIMER SET/CHECK
Set the hour of the turn-on time.

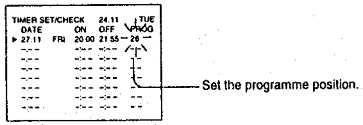
**7** Press ▶ to make the minute section under "ON" flash and then ▲ or ▼ until "00" appears.


TIMER SET/CHECK
Set the minute of the turn-on time.

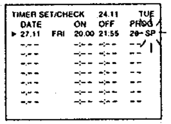
**8** Press ▶.
The end time flashes under "OFF".


TIMER SET/CHECK
Set the turn-off time.

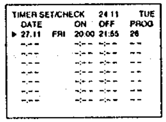
**9** Press ▶ to make the PROG section flash, then press ▲ or ▼ until 26 appears.
Only the programme positions set in the VTR appear.
You can also use the PROG +/–.


TIMER SET/CHECK
Set the programme position.

**10** Press ▶ to make the recording tape speed (SP or LP) flash and then press ▲, ▼ or TAPE SPEED so that SP appears.


TIMER SET/CHECK

**11** Press ▶ to store the setting.
When all of the settings stop flashing you have completed the setting. To preset another programme, move the cursor to the next line and repeat steps 4 to 10.


TIMER SET/CHECK

**12** Press EXECUTE.

**13** Press TIMER REC (ON/OFF).
The VTR is in now in standby mode for timer recording and the TIMER REC indicator appears in the display window. If no cassette has been inserted or the tape is at the end, the TIMER REC indicator does not appear.

The VTR automatically turns on, starts recording at the preset time, and turns off after recording ends.

When you set the VTR to the timer recording standby mode, you can record any previously preset programmes. The VTR turns on automatically to record the first preset programme. When it finishes recording the power automatically shuts off.

**To stop timer recording**
Press TIMER REC (ON/OFF).

**Notes:**
- To change or correct a setting before pressing EXECUTE, press ◀ to return to the item you wish to change.
- If a power interruption occurs during timer recording, recording stops and your VTR shuts off. If power is restored within one hour, and it is before the recording end time, recording starts again from that point. If the interruption lasts for more than one hour, any presettings are erased and you must reset the time and date for your programmes. Note that the tape counter returns to "0H00M00S".

## Daily/Weekly Recording

*You can preset your VTR for daily or weekly recording. Daily recording records the same programme every day of the week while weekly recording records the same programme on the same day, every week.*

**1** Follows steps 1 to 3 in "Setting the Timer:" (page 19).

**2** Press ▶.
The "DATE" position flashes.

**3** Press ▲ or ▼ until the desired date appears.

**Example:** If today is 27th November

| Indicator | Setting |
|---|---|
| 11/27 FRI | On 27th November |
| 11/26 SAT | On 28th November |
| 26/12 SAT | 1 month later |
| EVERY SUN | Every Sunday |
| EVERY MON | Every Monday |
| EVERY SAT | Every Saturday |
| MON-FRI | Every day except Saturday and Sunday |
| MON-SAT | Every day except Sunday |
| SUN-SAT | Every day |

**4** Follow steps 6 to 13 in "Setting the Timer" (page 20).

**To stop timer recording**
Press TIMER REC (ON/OFF).

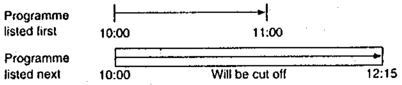
## Buttons Operable during Timer Recording

| | |
|---|---|
| **TIMER REC (ON/OFF)** | To stop timer recording. |
| **COUNTER RESET** | Reset the counter to "0H00M00S". |
| **DATA SCREEN** | Allows you to display data screen information. |
| **MENU** | Allows you to check the timer settings. |

## Overlapping Timer Recordings

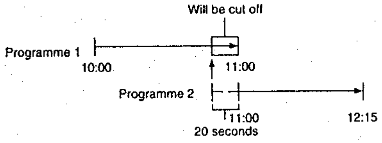
**Case 1**
If you preset two programmes to record at the same time ...

The programme listed first on the TIMER SET/CHECK display has priority over the other programmes. The timer settings for lower priority programmes are erased from the TIMER SET/CHECK display when recording begins for the first programme.


Programme listed first
10:00
11:00
Programme listed next
10:00
Will be cut off
12:15

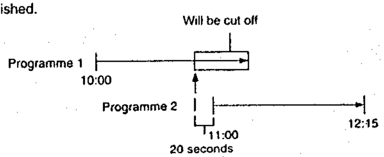
**Case 2**
If you preset programme 2 to start recording at the same time you preset programme 1 to finish recording ...

The last 20 seconds of programme 1 is not recorded because the VTR enters the recording pause mode for programme 2 before programme 1 is finished.


Will be cut off
Programme 1
10:00
11:00
Programme 2
11:00
20 seconds
12:15

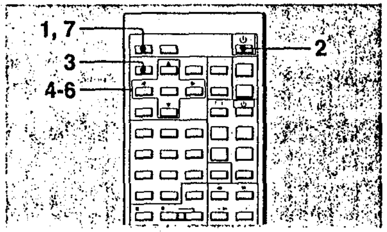
**Case 3**
If you set programme 2 to start recording before programme 1 is finished recording ...

Programme 2 starts recording before programme 1 has finished.


Will be cut off
Programme 1
10:00
Programme 2
11:00
20 seconds
12:15

## Checking the Timer Settings

*You can display your timer settings to confirm the programmes you wish to record.*

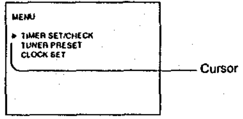


1 Press TIMER REC (ON/OFF).
The TIMER REC indicator in the display window turns off.

2 Press ⏻.

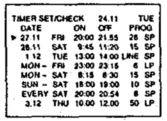
3 Press MENU.
The main MENU appears.

4 Press ▲ or ▼ to move the cursor (▶) to TIMER SET/CHECK.



```
MENU

▶ TIMER SET/CHECK
  TUNER PRESET
  CLOCK SET
```

5 Press EXECUTE.
The TIMER SET/CHECK display appears.



```
TIMER SET/CHECK      24.11      TUE
   DATE         ON     OFF    PROG
▶ 27.11   FRI  20:00  21.55   26  SP
  28.11   SAT   9:45  11:20   15  SP
   1 12   TUE  13:00  14.00 LINE  SP
  MON –   FRI  23:00  23:15    6  LP
  MON –   SAT   8:15   8:30   15  SP
  SUN –   SAT  18:00  19:00   10  SP
  EVERY   SAT  20:00  20:54    8  SP
   3.12   THU  10.00  12.00   50  LP
```

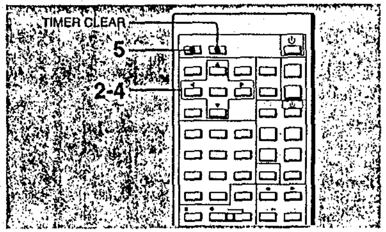
6 Press EXECUTE to return to the original screen.

7 Press TIMER REC (ON/OFF).
The VTR returns to the timer recording standby mode.

**Notes:**
- If you preset a programme to record only once, that setting is erased from the TIMER SET/CHECK display when recording has finished.
- To check the timer settings during timer recording, follow steps 3 to 6 above.

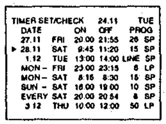
## Changing or Canceling the Timer Settings

*You can change or cancel the timer settings by referring to the TIMER SET/CHECK display.*



1 Display the TIMER/SET CHECK menu on the TV screen by following steps 1 to 5 in "Checking the Timer Settings" on this page.

2 Move the cursor to the programme you wish to change or cancel.



```
TIMER SET/CHECK      24.11      TUE
   DATE         ON     OFF    PROG
  27.11   FRI  20.00  21:55   26  SP
▶ 28.11   SAT   9:45  11:20   15  SP
   1.12   TUE  13:00  14:00 LINE  SP
  MON –   FRI  23.00  23:15    6  LP
  MON –   SAT   8:15   8:30   15  SP
  SUN –   SAT  18.00  19:00   10  SP
  EVERY   SAT  20.00  20:54    8  SP
   3 12   THU  10.00  12:00   50  LP
```

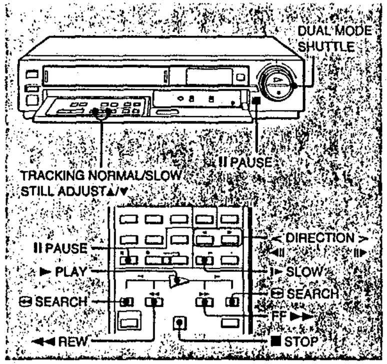
3 To make changes, press ◀ or ▶ to make the item to be changed flash, and then press ▲ or ▼ to make the changes.
To cancel, press TIMER CLEAR.

4 Press EXECUTE to complete the changes.
The original screen returns.

5 Press TIMER REC (ON/OFF) to return to the timer recording standby mode.

# Variable Speed Playback

*Using either the DUAL MODE SHUTTLE ring on your VTR or the Remote Commander, you can play back tapes at a variety of forward and reverse speeds. You can also freeze a picture using the II PAUSE button.*



## Pausing the Picture

During playback, press II PAUSE to freeze the picture in one position.
**To resume normal playback or enter the pause mode,** press either ▶ PLAY or II PAUSE.
If you leave your VTR in pause mode, normal playback resumes after approximately 5 minutes.

**If bands appear on the top or bottom of the screen while in pause mode**
Press I▶ SLOW to change to the slow-motion play mode, and adjust the picture with TRACKING NORMAL/SLOW and STILL ADJUST ▲/▼.

**If the picture shakes while in pause mode**
Adjust the picture with STILL ADJUST ▲/▼.

## Picture Search

During playback, keep pressing ◀◀ REW (reverse direction) or FF ▶▶ (forward direction).
A high-speed picture without sound appears on the TV screen.
**To resume normal playback,** release the button at a desired scene.
When using replay picture on a tape recorded in LP mode, the picture may not be in colour.

## Locked Picture Search

This feature allows you to lock in and view a high-speed picture while playing or pausing a tape.
During playback or in the pause mode, press ⊕ SEARCH (forward) or ⊖ SEARCH (reverse) on the Remote Commander.
**To resume normal playback, press ▶ PLAY.**

## Slow-motion Picture

During playback or while in the pause mode, press I▶ SLOW +/–. Change the slow-motion speed with the (+) and (–) buttons. Press (+) to increase the playback speed, and (–) to decrease it.
**To resume normal playback, press ▶ PLAY.**

## Frame-by-frame Picture

While in the pause mode, press ◀II <DIRECTION> to reverse the picture one frame. Press II▶ <DIRECTION> to advance the picture one frame.
**To resume normal playback, press ▶ PLAY .**

## Replay Picture

While in the playback or pause modes, press REPLAY once on the Remote Commander or VTR. For 2 seconds, as displayed on the counter, the previous scene is played back in reverse mode at -X1 speed. It is then played back in forward mode at X1/5 speed (slow motion). Press REPLAY and hold it down to return to a desired scene. Release the REPLAY button to play back the scene at X1/5 speed (slow motion).
**To resume normal playback or enter the pause mode,** press either ▶ PLAY or II PAUSE.

## Skip Playback

The skip function allows you to scan ahead at high speed while in the playback mode. Press SKIP on the Remote Commander to view a high-speed picture of the scene, once for 30 seconds and twice for 60 seconds. After the 30 second or 60 second interval the VTR resumes normal playback.

## X2 Normal Speed Playback

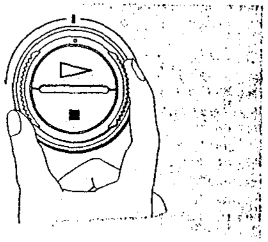
Using this function you can view the contents of your tape at two times the normal speed in either the reverse or forward modes. To view a tape at two times the normal speed in forward mode press X2 and II▶ <DIRECTION>, and for reverse mode press X2 and ◀II <DIRECTION>.
**To resume normal playback, press ▶ PLAY.**

### Pausing the Picture Momentarily during Fast-forward or Rewind

During fast-forward, turn the DUAL MODE SHUTTLE ring on the VTR clockwise or press FF ►► on the Remote Commander.
During rewind, turn the DUAL MODE SHUTTLE ring counterclockwise or press ◄◄ REW on the Remote Commander.
To return to the fast-forward or rewind mode, release the ring or the button.

### Variable Speed Playback Using the DUAL MODE SHUTTLE Ring

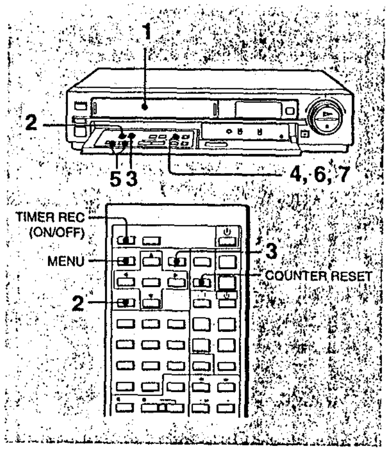
You can also enjoy variable speed playback using the DUAL MODE SHUTTLE ring on the VTR.
In any playback mode, turn the DUAL MODE SHUTTLE ring in either the forward or reverse direction as shown. When you release the ring, normal playback resumes. (If you turn the ring in the pause mode, however, releasing the ring pauses a picture. To resume normal playback, press ► PLAY.)



**Notes:**
- Streaks or snow may appear when using variable speed playback.
- When using variable speed playback on a tape recorded in LP mode, the picture's colour will fade.

# Quick-Timer Recording

*This function is convenient for recording programmes without going through the entire timer setting procedure. You can set the recording duration in increments of 30 minutes, for up to eight hours.*
*You can also use this function, during recording, to turn off the VTR after the programme is over.*



**1** Insert a cassette with a safety tab on it.

**2** Press INPUT SELECT to light up the programme position number indicator in the display window.

**3** Press TAPE SPEED to select the recording tape speed, *SP or LP.*

**4** Press QUICK TIMER on the VTR.
If a cassette with its safety tab removed has been inserted, the VTR ejects the cassette.

**5** Press PROGRAM +/– on the VTR to select the programme position number you wish to record.

**6** Press QUICK TIMER within one minute after selecting the programme to start recording.
The REC indicator appears in the display window.

**Note:**
If you don't press QUICK TIMER within one minute after selecting the programme position, the VTR shuts off.

**7** Press QUICK TIMER to decide the recording duration. Each press on the button increases the recording duration in increments of 30 minutes as shown below.

→0:00 → 0:30 → 1:00 → …… → 7:30 → 8:00

Turn off the TV, and the VTR continues recording.
The recording duration decreases minute by minute until 0:00 appears, and then the VTR turns off automatically.

**To stop quick-timer recording**
Press TIMER REC (ON/OFF).

**To extend the recording duration during recording**
Press QUICK TIMER the desired number of times. One press on the button increases the duration by 30 minutes.

**If the VTR is in the standby mode for recording**
Press TIMER REC (ON/OFF) to turn off the TIMER REC indicator in the display window and do steps 3 to 7.

**Notes:**
- You cannot change or erase timer settings during quick-timer recording.
- If the power interruption lasts less than one hour and power is restored before the recording end time, recording resumes from that instant.

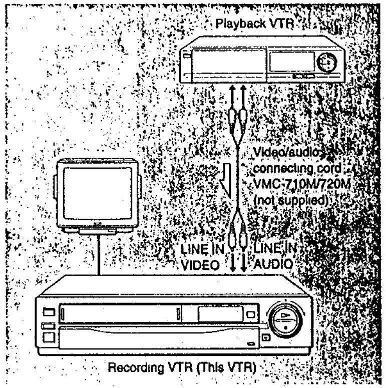
### Buttons Operable during Quick-timer Recording

| | |
|---|---|
| **TIMER REC (ON/OFF)** | To stop quick-timer recording. |
| **COUNTER RESET** | Reset the counter to "0H00M00S". |
| **DATA SCREEN** | Allows you to display data screen information. |
| **MENU** | Allows you to check the timer settings. |

# Editing with Another VTR

## Using this VTR as the Recording VTR

**Connection**
You can connect another VTR (the playback VTR) to the LINE IN VIDEO/AUDIO jacks at the rear of this VTR.



1 Insert a cassette for recording into this VTR (used for recording).

2 Turn on the other VTR (the playback VTR) and insert the source cassette.

3 On this VTR, press INPUT SELECT to light up LINE on the VTR display.

4 On the other VTR, search for the desired playback start point and press ❚❚ PAUSE to enter the playback pause mode.

5 On this VTR, search for the desired recording start point, press ❚❚ PAUSE on the Remote Commander and then press the two ● REC buttons to enter the recording pause mode.

6 Release ❚❚ PAUSE on this VTR and press ❚❚ PAUSE on the other VTR.
Recording of the signals from the other (playback) VTR starts.

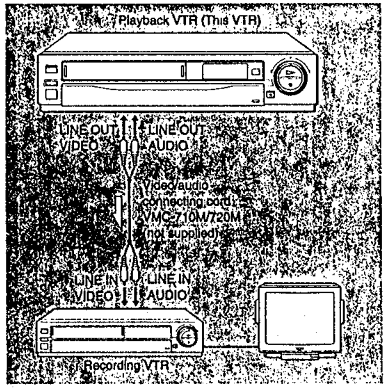
7 When finished, press ■ STOP on both of the VTRs.

**When the recording VTR is a stereo type**
Make connections using the VMC-910MS/920MS connecting cord (not supplied).

**When connecting the VTRs**
Do not connect both LINE IN and LINE OUT jacks on the two VTRs simultaneously. Doing so may cause a humming noise.

## Using this VTR as the Playback VTR

**Connection**
You can connect another VTR (the recording VTR) to the LINE OUT VIDEO/AUDIO jacks at the rear of this VTR.
On the other VTR, select external video or line, and make the necessary settings for recording.



1 Turn on the other VTR (the recording VTR) and insert a cassette for recording.

2 Insert a source cassette into this VTR (the playback VTR).

3 On this VTR, search for the desired playback start point and press ❚❚ PAUSE to enter the playback pause mode.

4 On the other VTR, search for the desired recording start point and enter the recording pause mode.

5 Press ❚❚ PAUSE on the other VTR and then release ❚❚ PAUSE on this VTR.
Recording of the signals from the playback VTR starts.

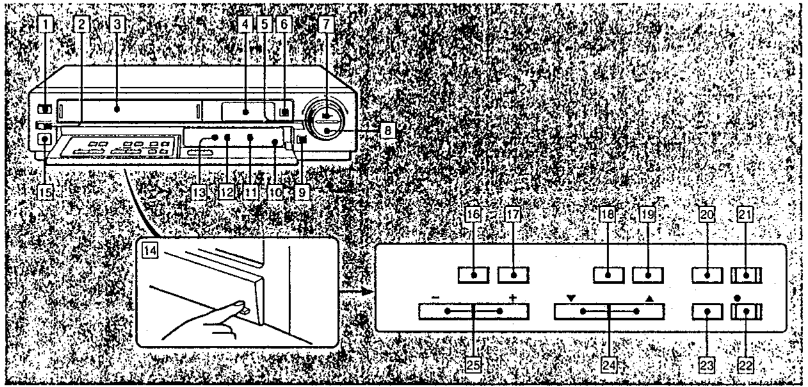
6 When finished, press ■ STOP on both of the VTRs.

**Note:**
Recording of video sources based on the NTSC colour system cannot be guaranteed.

Chapter 5 - Additional Information

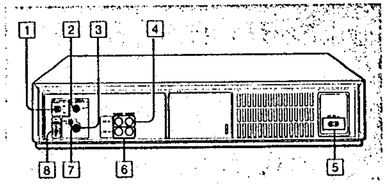
# Identifying Parts and Controls

## Front Panel



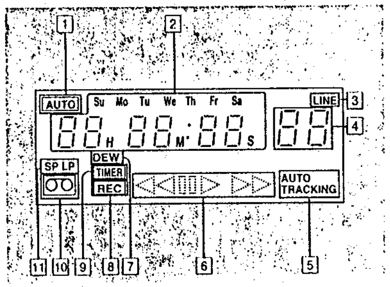
1 ON/STANDBY switch and indicator (See page 6.)
2 ≜ EJECT button (See page 14.)
3 Cassette compartment (See pages 14 and 17.)
4 Display window (See page 6.)
5 DUAL MODE SHUTTLE ring (See page 23.)
6 REPLAY button (See page 23.)
7 ► PLAY button (See page 15.)
8 ■ STOP button (See pages 15 and 17.)
9 ❚❚ PAUSE button (See pages 15 and 17.)
10 CL (clear) button (See page 31.)
11 COLOR SYSTEM selector (See page 15.)
12 RENTAL PICTURE switch (See pages 15 and 16.)
13 SHARPNESS SOFT/SHARP control (See pages 15 and 16.)
14 ▼ OPEN - projection (See page 6.)
15 Remote sensor (See page 8.)
16 INPUT SELECT button (See page 6.)
17 TAPE SPEED button (See page 17.)
18 CLOCK/COUNTER button (See page 16.)
19 COUNTER RESET button (See pages 16 and 21.)
20 QUICK TIMER button (See page 25.)
21 TIMER REC (ON/OFF) button (See page 19.)
22 ● REC button (See page 17.)
23 TRACKING AUTO/MANUAL button (See page 16.)
24 TRACKING NORMAL/SLOW and STILL ADJUST ▲/▼ buttons (See pages 16 and 23.)
25 PROGRAM +/– buttons (See page 7.)

## Rear Panel



1. RF CHANNEL selector (See page 7.)
2. AERIAL OUT connector (See page 4.)
3. AERIAL IN connector (See page 4.)
4. LINE IN AUDIO/VIDEO jacks (See page 26.)
5. AC IN connector (See page 4.)
6. LINE OUT AUDIO/VIDEO jacks (See pages 4 and 26.)
7. LOCAL/DX switch (See page 7.)
8. TV SYSTEM G/K output selector (See page 6.)

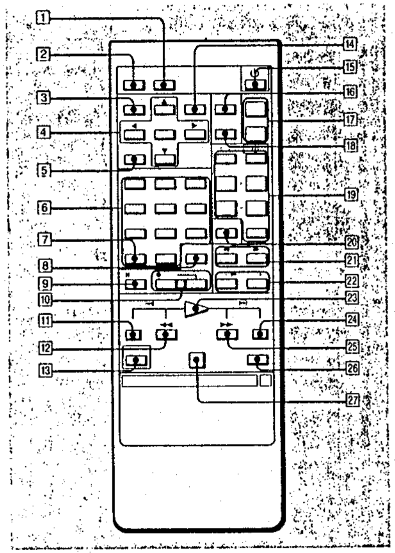
## Indicators in the Display Window



1. AUTO indicator (See page 15.)
2. Linear time counter and clock
3. LINE indicator (See pages 6 and 25.)
4. Programme number (See page 11.)
5. AUTO TRACKING indicator (See page 16.)
6. Tape operation indicator (See page 15.)
7. DEW (moisture condensation) indicator (See page 31.)
8. REC (recording) indicator (See page 17.)
9. TIMER recording indicator (See pages 20 and 25.)
10. Cassette indicator (appears when a cassette is loaded) (See page 14.)
11. Tape speed indicator (See page 17.)

## Remote Commander

The buttons on the Remote Commander with the same name or mark as those on the VTR have the same function. You can also use the buttons in the "TV" section to remotely control Sony TVs with the ▣ mark.



1. TIMER CLEAR button (See page 22.)
2. TIMER REC (ON/OFF) (See page 19.)
3. MENU button (See page 9.)
4. ◀▲▶▼ Cursor buttons (See page 9.)
5. INPUT SELECT button (See page 6.)
6. Program number buttons (See page 12.)
7. -/-- (10's digit) button (See page 12.)
8. X2 (two times normal speed) button (See page 23.)
9. ❚❚ PAUSE button (See page 15.)
10. ● REC buttons (See page 17.)
11. ⇹ SEARCH button (See page 23.)
12. ◀◀ REW button (See page 15.)
13. REPLAY button (See page 23.)
14. TAPE SPEED button (See page 17.)
15. ⏻ button (power [on/off]) button (See page 9.)
16. CLOCK/COUNTER button (See page 16.)
17. PROG +/– buttons (See page 17.)
18. COUNTER RESET button (See pages 16 and 21.)
19. TV control buttons (See page 8.)

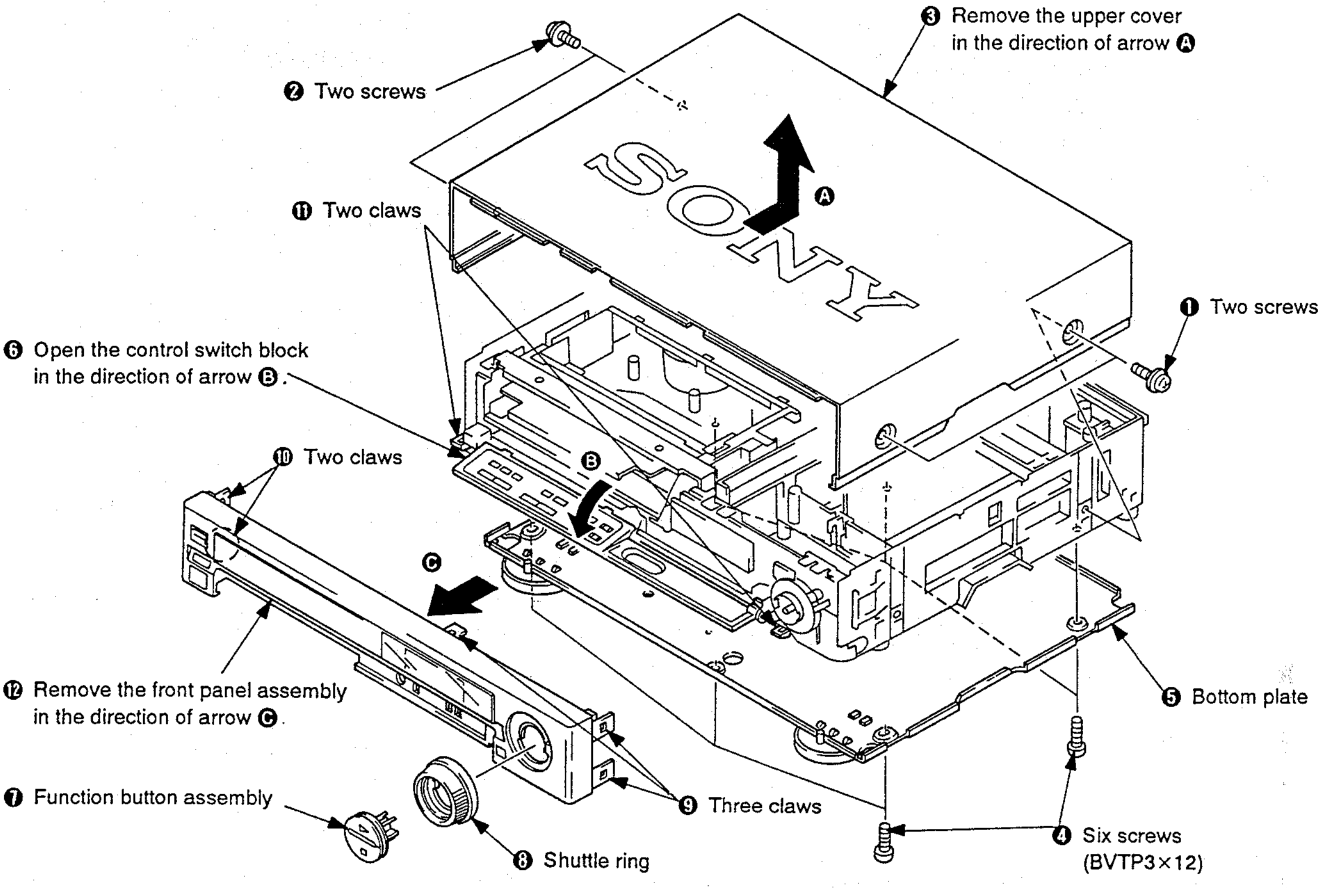
    ⏻ (power) button
    ○ TV power (on/off) button
    TV PROG +/– buttons
    TV VOL (volume) +/– buttons
    TV/VIDEO buttons

20. DATA SCREEN button (See page 16.)
21. ◀❚❚❚▶ <DIRECTION> buttons (See page 23.)
22. ❚▶ SLOW button (See page 23.)
23. ▶ PLAY button (See page 15.)
24. ⇹ SEARCH button (See page 23.)
25. ▶▶ FF button (See page 15.)
26. SKIP button (See page 23.)
27. ■ STOP button (See pages 15 and 17.)

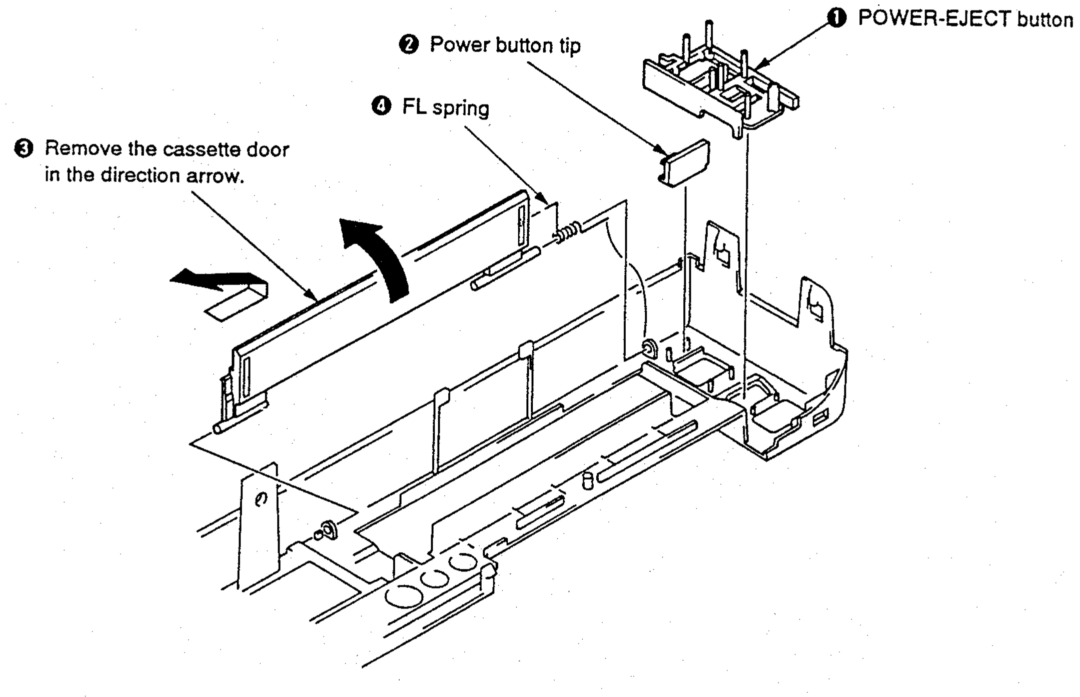
# SECTION 2

# DISASSEMBLY

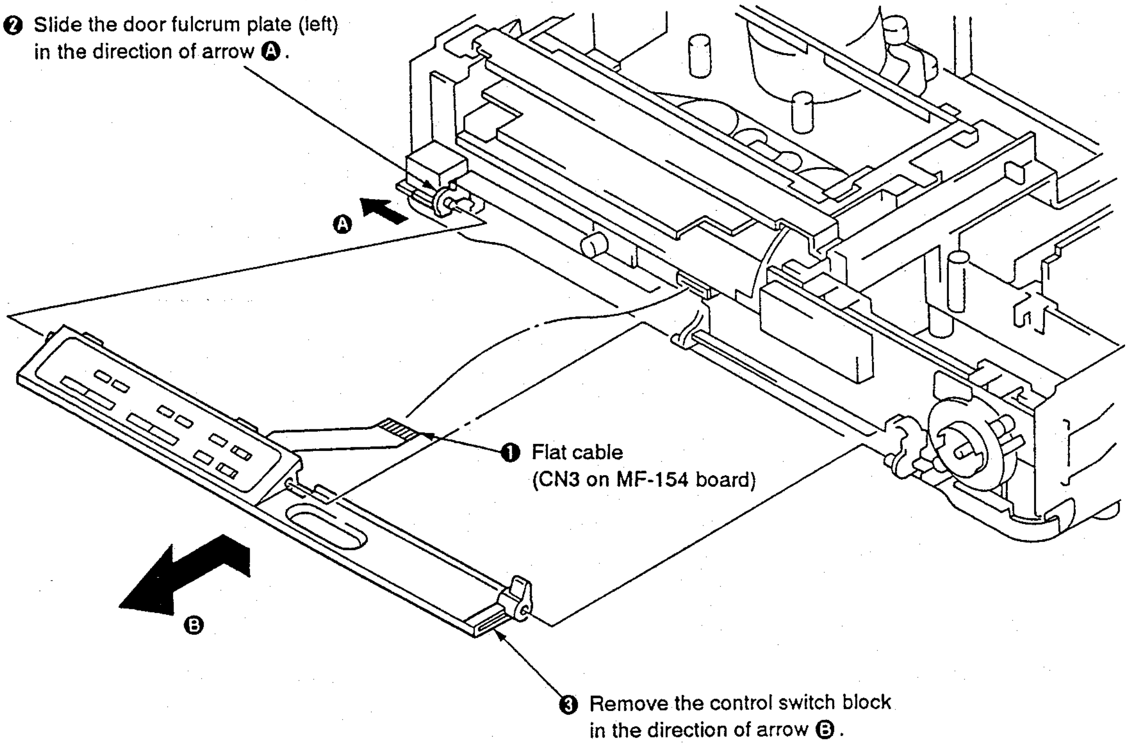
## 2-1. REMOVAL OF FRONT PANEL ASSEMBLY


❸ Remove the upper cover in the direction of arrow Ⓐ
❷ Two screws
Ⓐ
⓫ Two claws
❶ Two screws
❻ Open the control switch block in the direction of arrow Ⓑ.
Ⓑ
❿ Two claws
Ⓒ
⓬ Remove the front panel assembly in the direction of arrow Ⓒ.
❺ Bottom plate
❼ Function button assembly
❾ Three claws
❽ Shuttle ring
❹ Six screws (BVTP3×12)

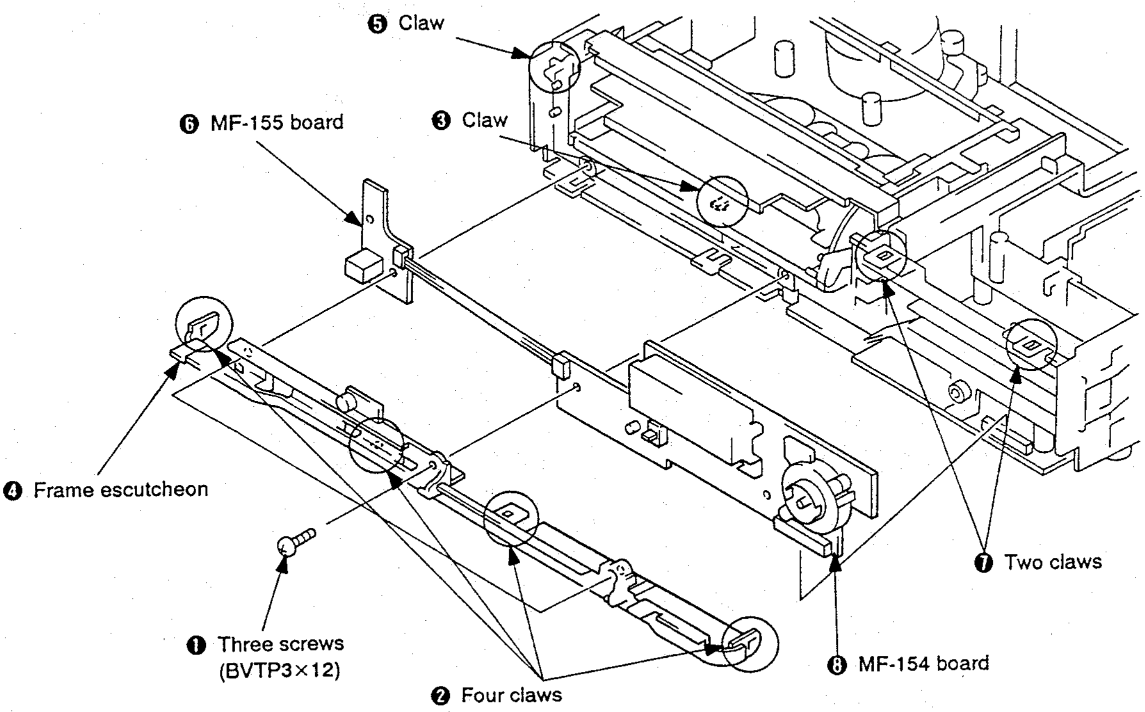
## 2-2. REMOVAL OF CASSETTE DOOR


❶ POWER-EJECT button
❷ Power button tip
❹ FL spring
❸ Remove the cassette door in the direction arrow.

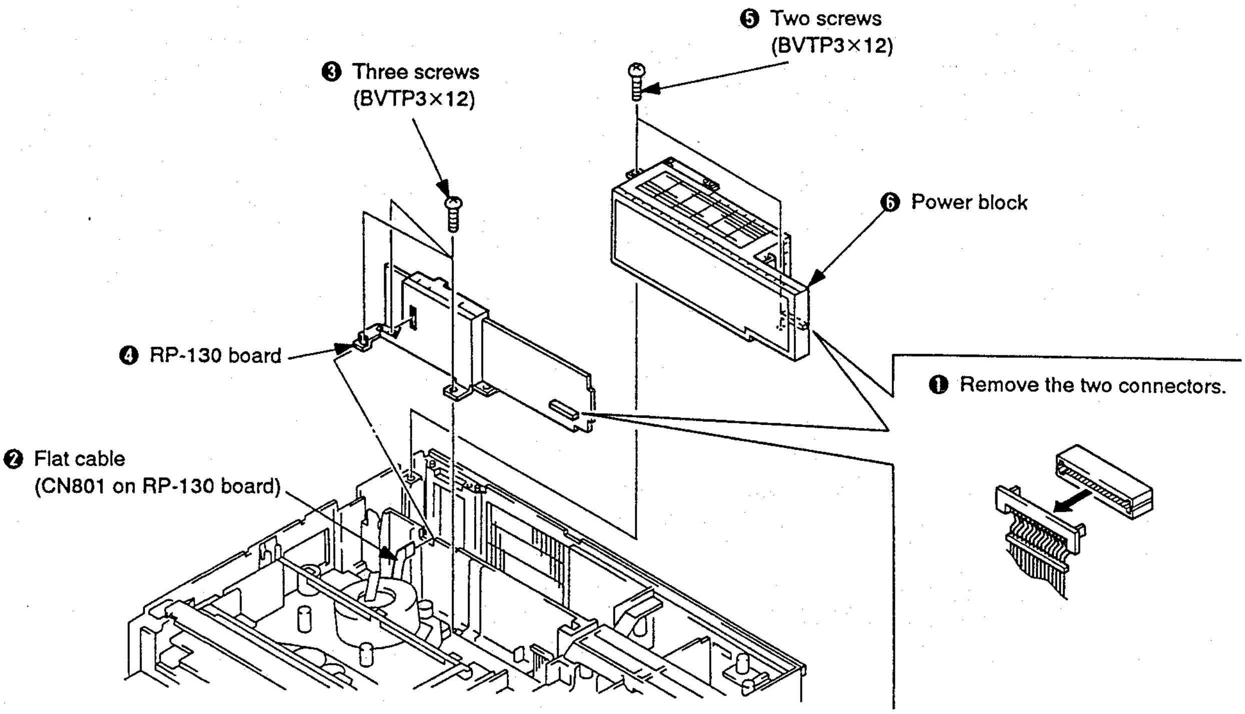
## 2-3. REMOVAL OF CONTROL SWITCH BLOCK


❷ Slide the door fulcrum plate (left) in the direction of arrow Ⓐ.
Ⓐ
❶ Flat cable (CN3 on MF-154 board)
Ⓑ
❸ Remove the control switch block in the direction of arrow Ⓑ.

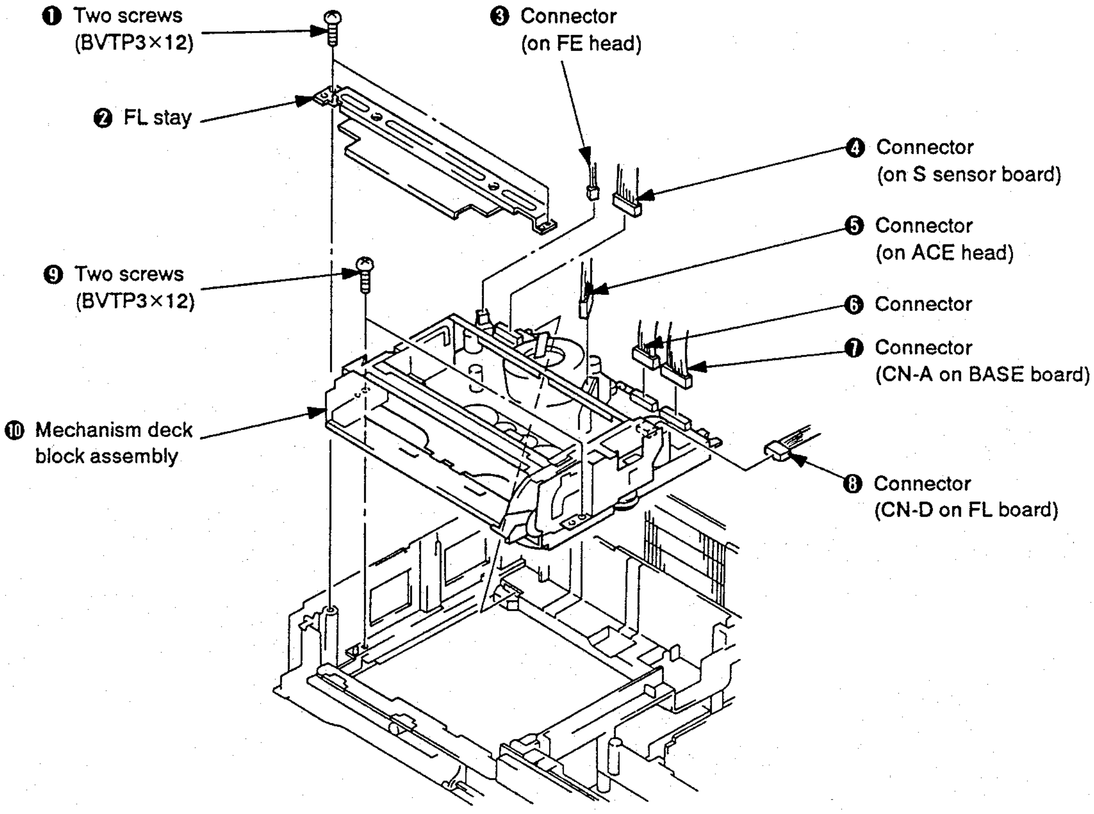
## 2-4. REMOVAL OF MF-154 AND MF-155 BOARDS


❺ Claw
❻ MF-155 board
❸ Claw
❹ Frame escutcheon
❼ Two claws
❶ Three screws (BVTP3×12)
❽ MF-154 board
❷ Four claws

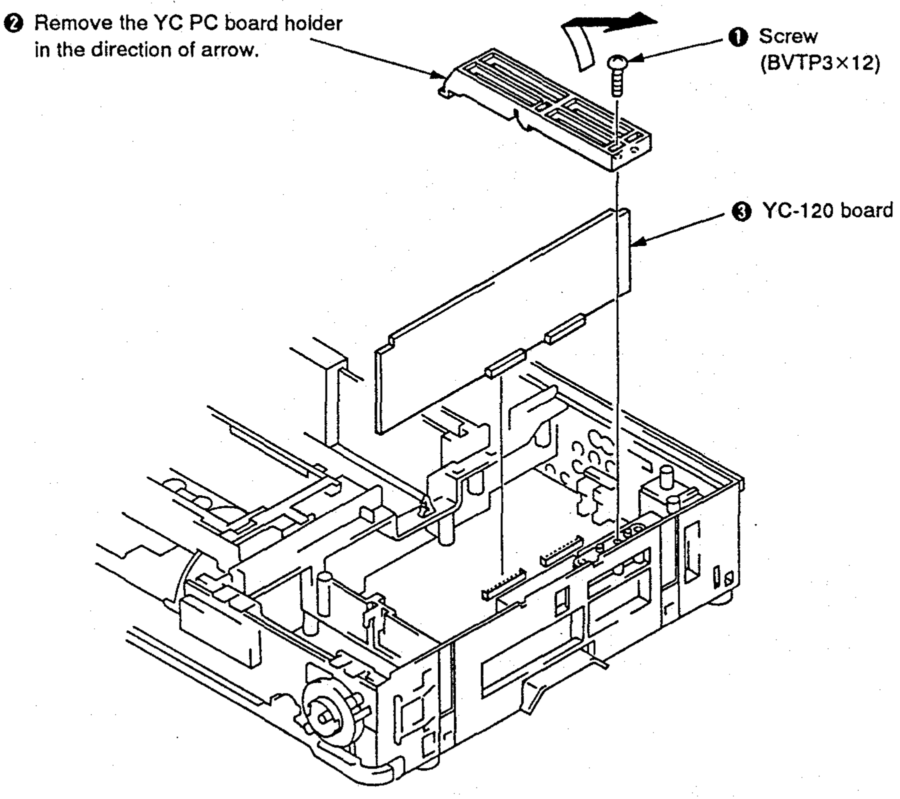
## 2-5. REMOVAL OF RP-130 BOARD AND POWER BLOCK


❺ Two screws
(BVTP3×12)
❸ Three screws
(BVTP3×12)
❻ Power block
❹ RP-130 board
❶ Remove the two connectors.
❷ Flat cable
(CN801 on RP-130 board)

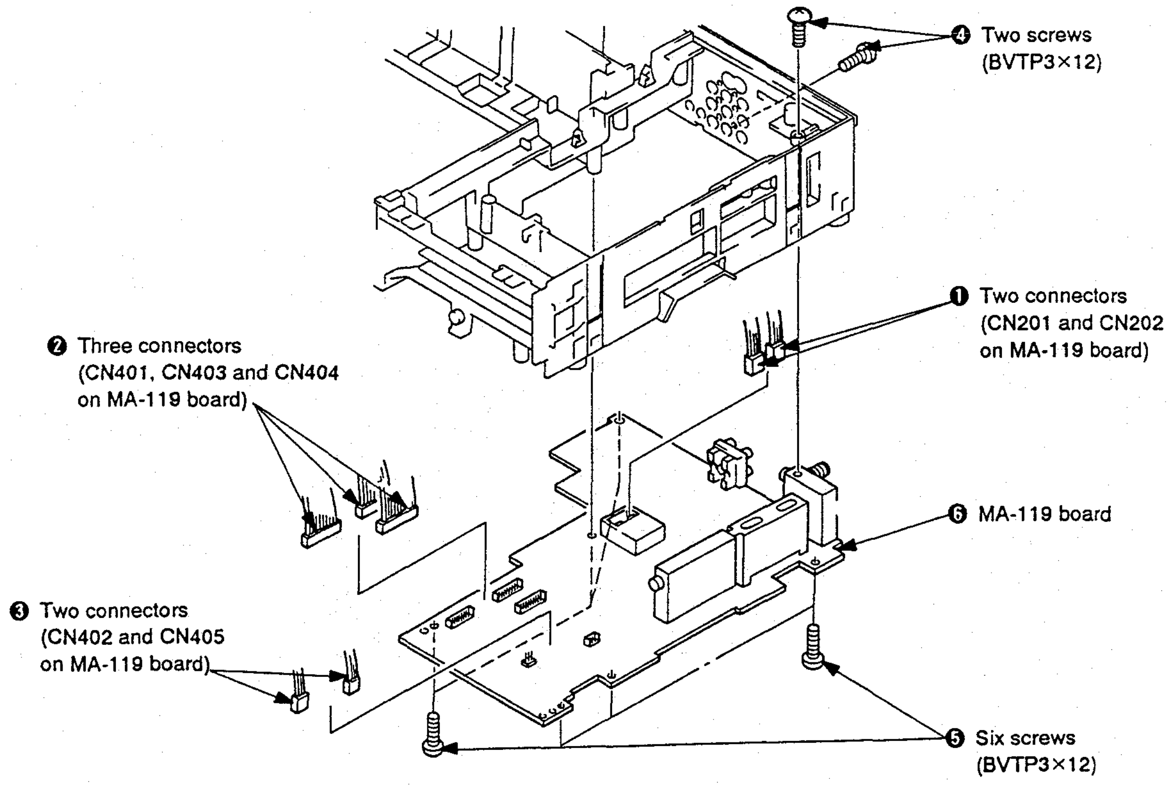
## 2-6. REMOVAL OF MECHANISM DECK BLOCK ASSEMBLY


❶ Two screws
(BVTP3×12)
❸ Connector
(on FE head)
❷ FL stay
❹ Connector
(on S sensor board)
❺ Connector
(on ACE head)
❾ Two screws
(BVTP3×12)
❻ Connector
❼ Connector
(CN-A on BASE board)
❿ Mechanism deck
block assembly
❽ Connector
(CN-D on FL board)

## 2-7. REMOVAL OF YC-120 BOARD

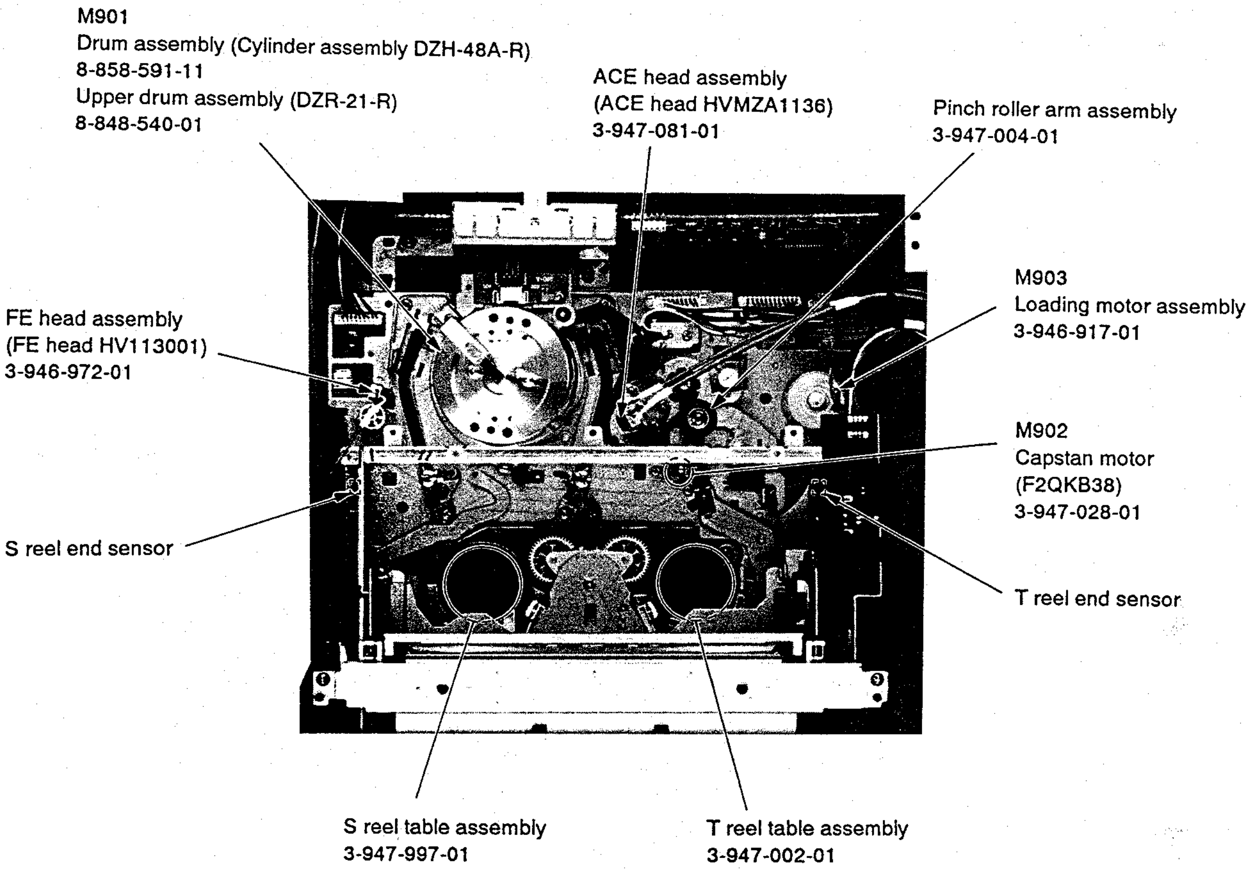

❷ Remove the YC PC board holder in the direction of arrow.
❶ Screw (BVTP3×12)
❸ YC-120 board

## 2-8. REMOVAL OF MA-119 BOARD

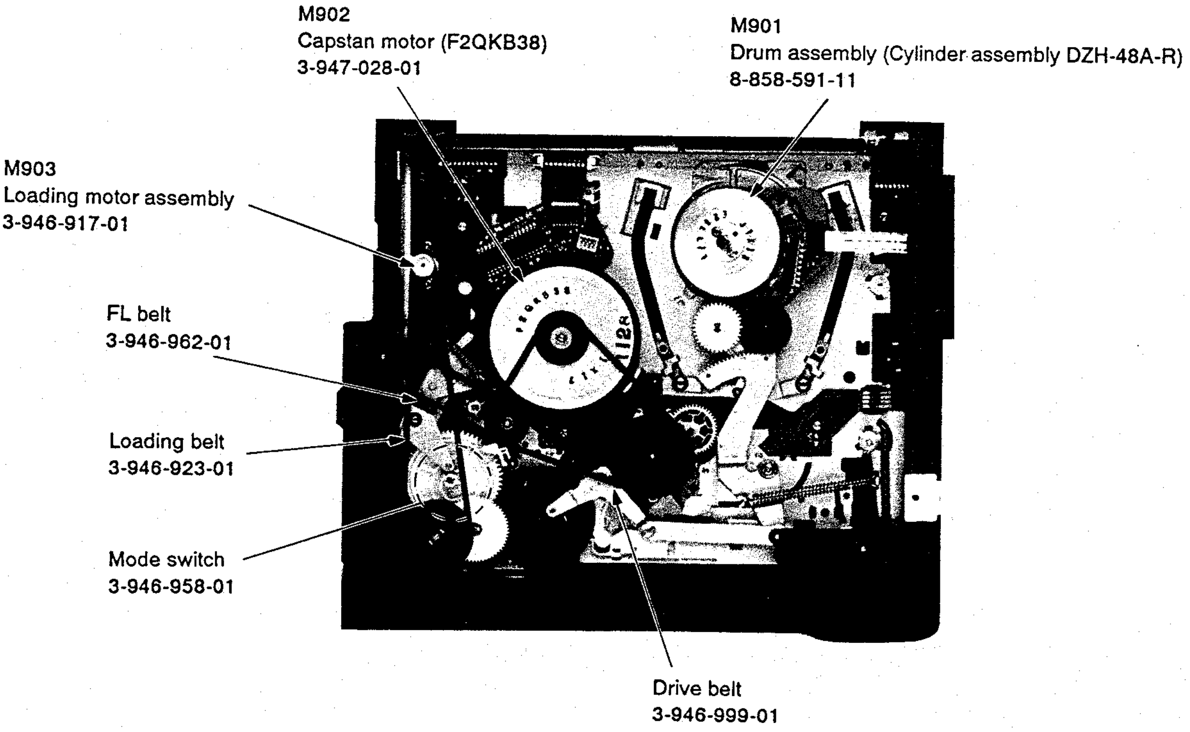

❹ Two screws (BVTP3×12)
❶ Two connectors (CN201 and CN202 on MA-119 board)
❷ Three connectors (CN401, CN403 and CN404 on MA-119 board)
❻ MA-119 board
❸ Two connectors (CN402 and CN405 on MA-119 board)
❺ Six screws (BVTP3×12)

## 2-9. INTERNAL VIEWS

### — Top Side —

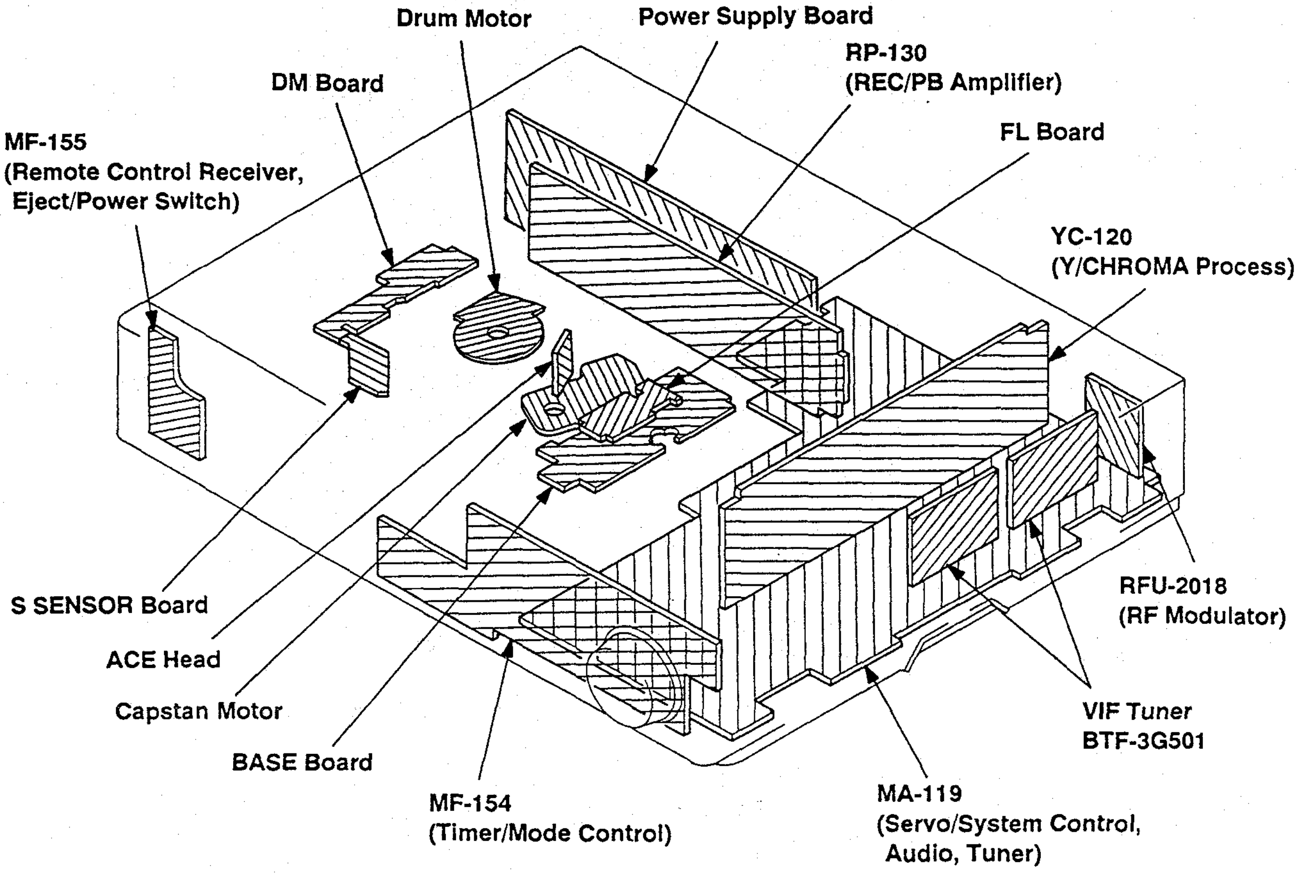

M901
Drum assembly (Cylinder assembly DZH-48A-R)
8-858-591-11
Upper drum assembly (DZR-21-R)
8-848-540-01
ACE head assembly
(ACE head HVMZA1136)
3-947-081-01
Pinch roller arm assembly
3-947-004-01
M903
Loading motor assembly
3-946-917-01
FE head assembly
(FE head HV113001)
3-946-972-01
M902
Capstan motor
(F2QKB38)
3-947-028-01
S reel end sensor
T reel end sensor
S reel table assembly
3-947-997-01
T reel table assembly
3-947-002-01

### — Bottom Side —

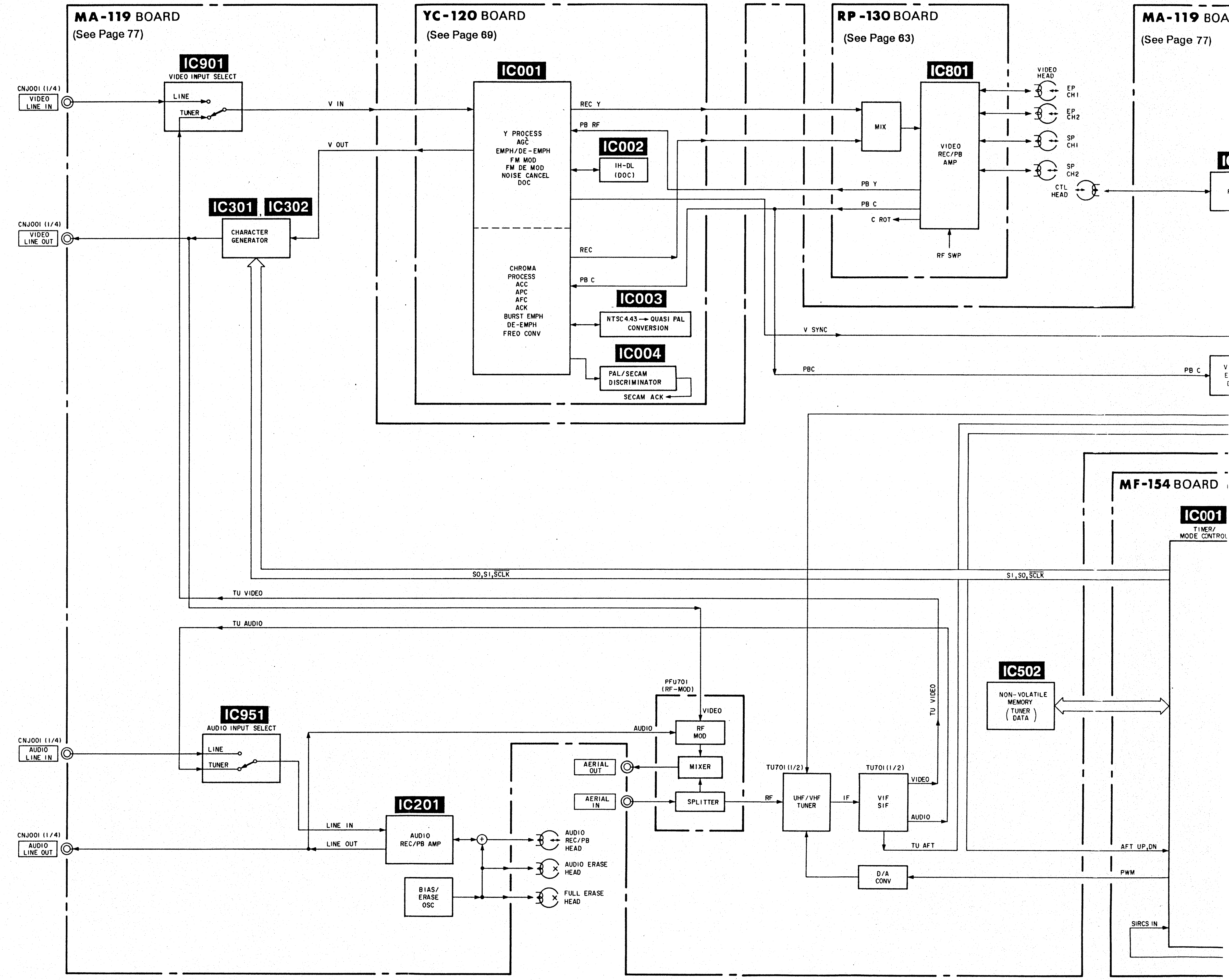

M902
Capstan motor (F2QKB38)
3-947-028-01
M901
Drum assembly (Cylinder assembly DZH-48A-R)
8-858-591-11
M903
Loading motor assembly
3-946-917-01
FL belt
3-946-962-01
Loading belt
3-946-923-01
Mode switch
3-946-958-01
Drive belt
3-946-999-01

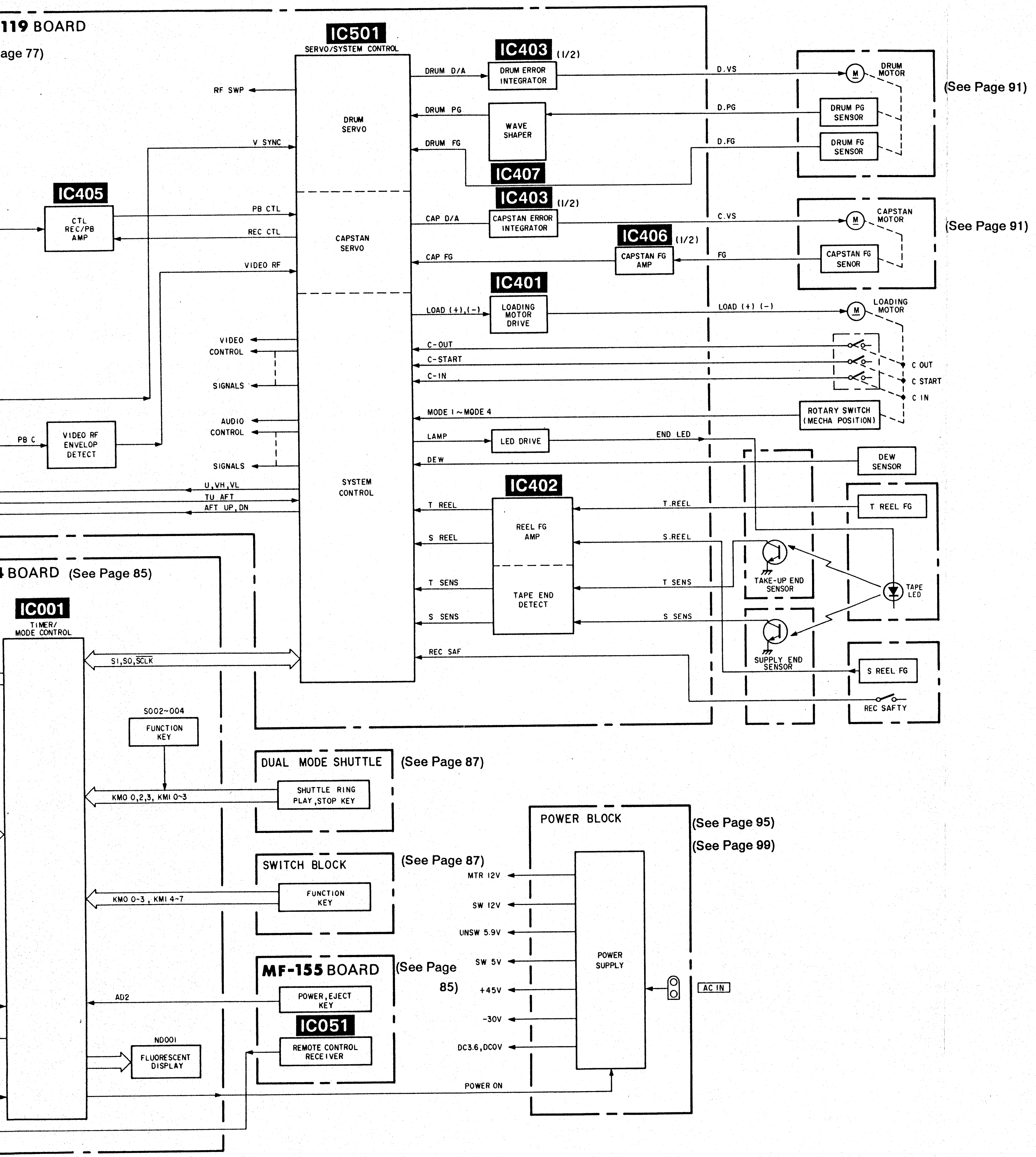
# SECTION 3
# DIAGRAMS

## 3-1. CIRCUIT BOARDS LOCATION

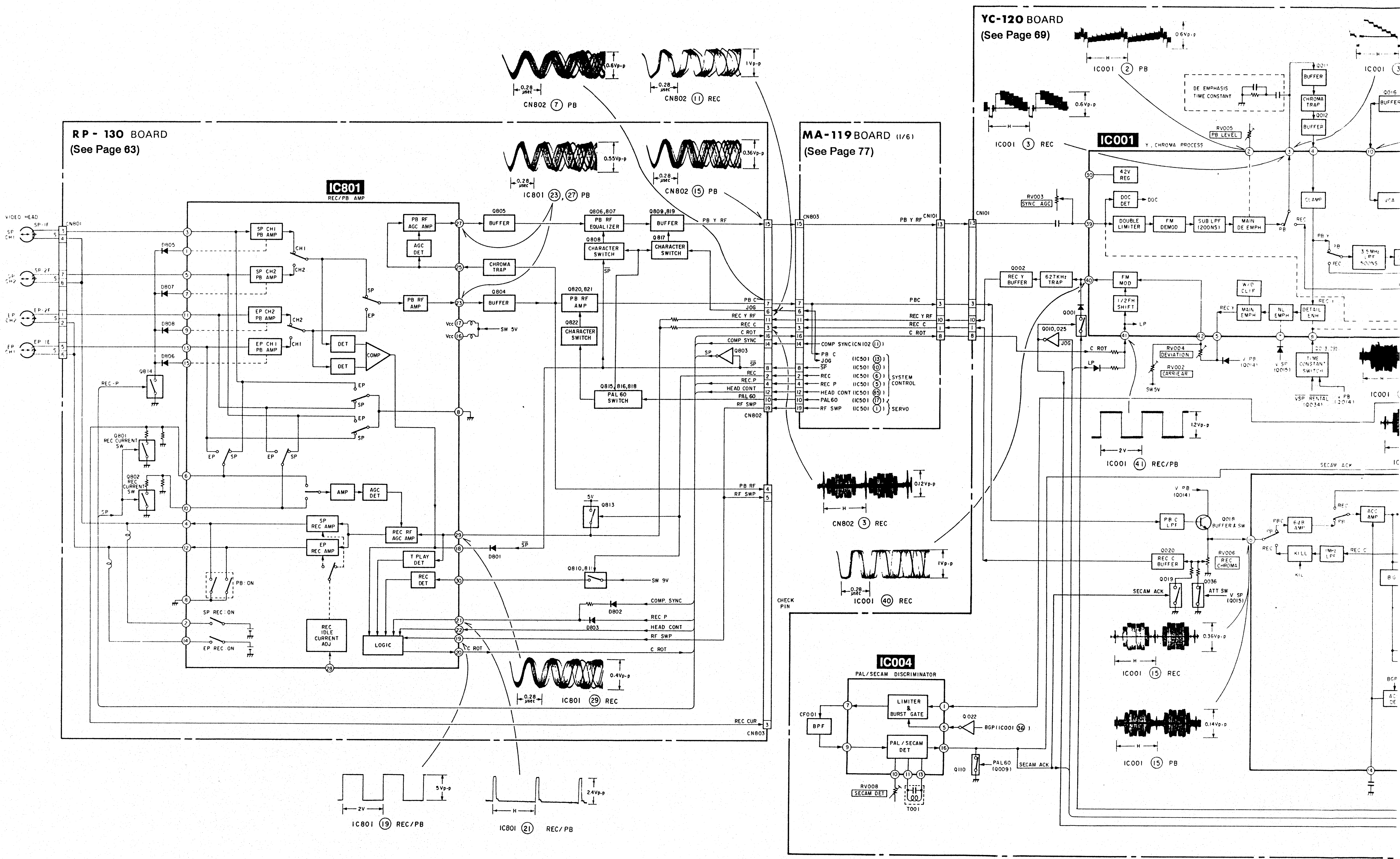

Drum Motor
Power Supply Board
RP-130
(REC/PB Amplifier)
DM Board
FL Board
MF-155
(Remote Control Receiver,
Eject/Power Switch)
YC-120
(Y/CHROMA Process)
S SENSOR Board
ACE Head
Capstan Motor
BASE Board
RFU-2018
(RF Modulator)
VIF Tuner
BTF-3G501
MF-154
(Timer/Mode Control)
MA-119
(Servo/System Control,
Audio, Tuner)

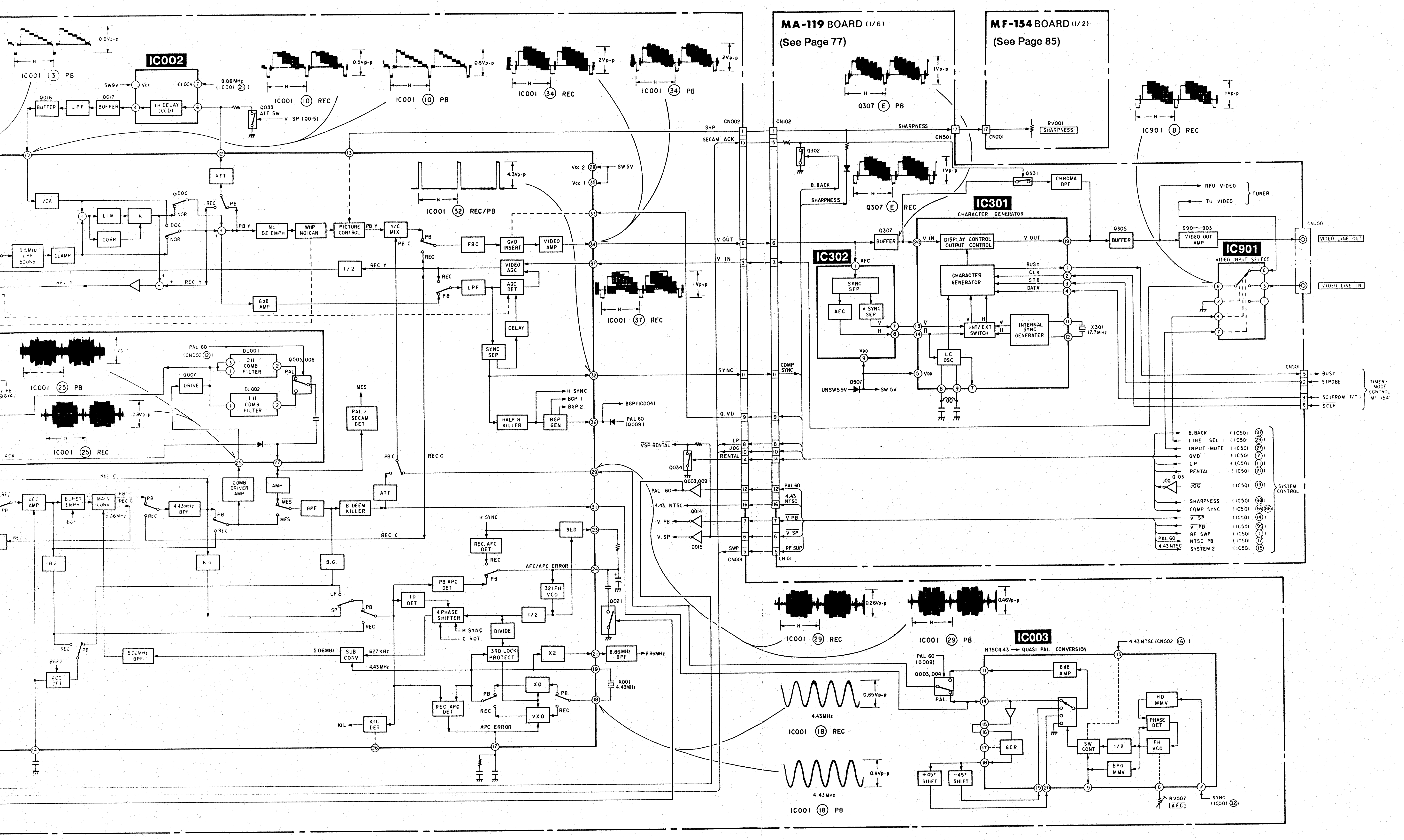
## 3-2. OVERALL BLOCK DIAGRAM


MA-119 BOARD
(See Page 77)
IC901
VIDEO INPUT SELECT
LINE
TUNER
CNJ001 (1/4)
VIDEO LINE IN
CNJ001 (1/4)
VIDEO LINE OUT
IC301 , IC302
CHARACTER GENERATOR
V IN
V OUT
YC-120 BOARD
(See Page 69)
IC001
Y PROCESS
AGC
EMPH/DE-EMPH
FM MOD
FM DE MOD
NOISE CANCEL
DOC
CHROMA
PROCESS
ACC
APC
AFC
ACK
BURST EMPH
DE-EMPH
FREQ CONV
REC Y
PB RF
IC002
1H-DL
(DOC)
REC
PB C
IC003
NTSC4.43 → QUASI PAL CONVERSION
IC004
PAL/SECAM DISCRIMINATOR
SECAM ACK
RP-130 BOARD
(See Page 63)
MIX
IC801
VIDEO REC/PB AMP
PB Y
PB C
C ROT
RF SWP
VIDEO HEAD
EP CH1
EP CH2
SP CH1
SP CH2
CTL HEAD
MA-119 BOA
(See Page 77)
V SYNC
PBC
PB C
SO,SI,SCLK
SI,SO,SCLK
TU VIDEO
TU AUDIO
MF-154 BOARD
IC001
TIMER/
MODE CONTROL
IC502
NON-VOLATILE MEMORY
( TUNER DATA )
IC951
AUDIO INPUT SELECT
LINE
TUNER
CNJ001 (1/4)
AUDIO LINE IN
CNJ001 (1/4)
AUDIO LINE OUT
IC201
AUDIO REC/PB AMP
LINE IN
LINE OUT
BIAS/ ERASE OSC
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
PFU701
(RF-MOD)
VIDEO
AUDIO
RF MOD
MIXER
SPLITTER
AERIAL OUT
AERIAL IN
RF
TU701 (1/2)
UHF/VHF TUNER
IF
TU701 (1/2)
VIF SIF
VIDEO
AUDIO
TU VIDEO
TU AFT
D/A CONV
AFT UP,DN
PWM
SIRCS IN

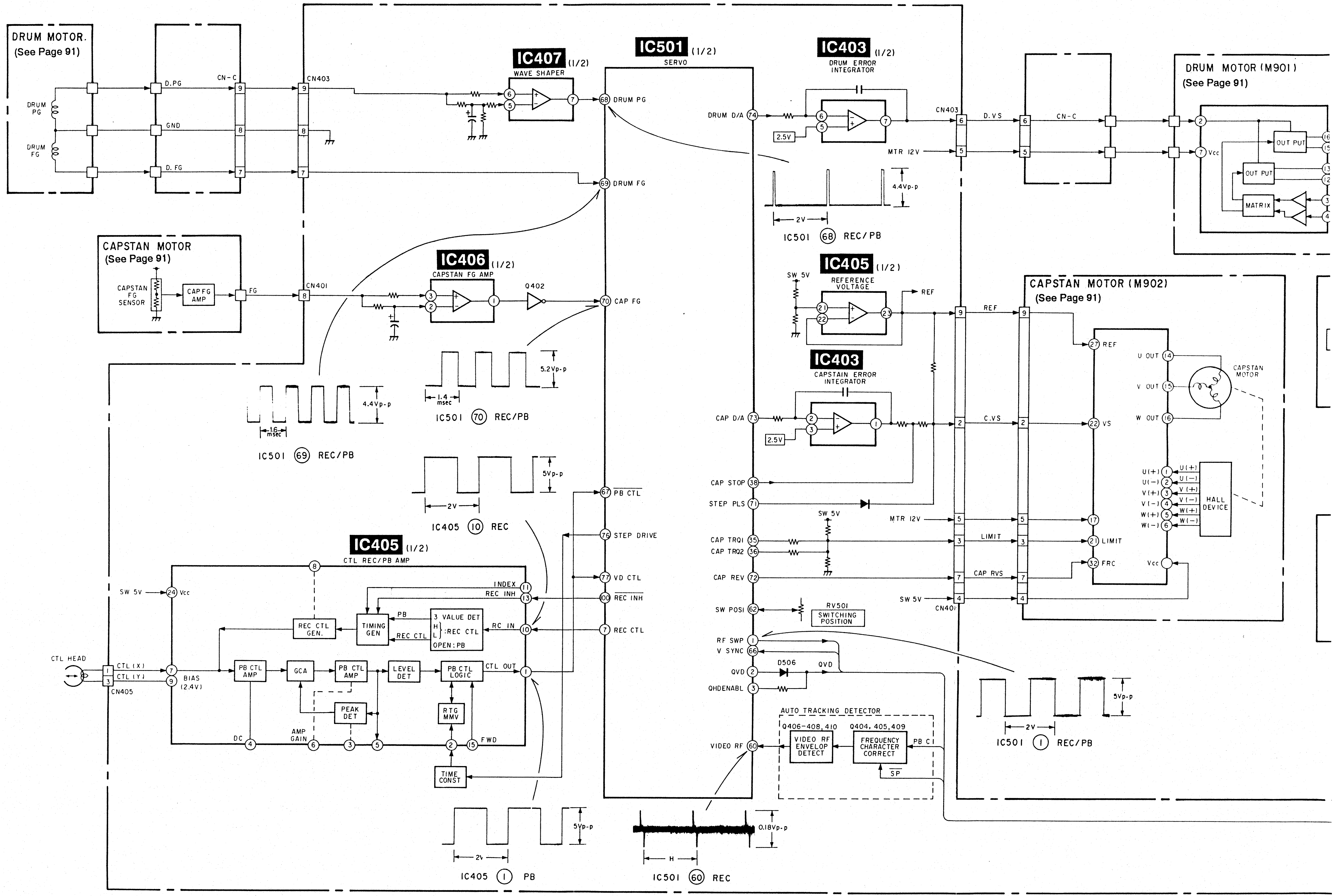

119 BOARD
age 77)
IC501
SERVO/SYSTEM CONTROL
DRUM SERVO
CAPSTAN SERVO
SYSTEM CONTROL
RF SWP
V SYNC
IC405
CTL REC/PB AMP
PB CTL
REC CTL
VIDEO RF
VIDEO CONTROL
SIGNALS
AUDIO CONTROL
SIGNALS
PB C
VIDEO RF ENVELOP DETECT
U,VH,VL
TU AFT
AFT UP,DN
IC403 (1/2)
DRUM D/A
DRUM ERROR INTEGRATOR
DRUM PG
WAVE SHAPER
DRUM FG
IC407
IC403 (1/2)
CAP D/A
CAPSTAN ERROR INTEGRATOR
IC406 (1/2)
CAP FG
CAPSTAN FG AMP
IC401
LOAD (+),(−)
LOADING MOTOR DRIVE
C-OUT
C-START
C-IN
MODE 1 ~ MODE 4
LAMP
LED DRIVE
END LED
DEW
IC402
T REEL
S REEL
REEL FG AMP
T SENS
S SENS
TAPE END DETECT
REC SAF
D.VS
D.PG
D.FG
C.VS
FG
LOAD (+) (−)
T.REEL
S.REEL
T SENS
S SENS
M
DRUM MOTOR
DRUM PG SENSOR
DRUM FG SENSOR
(See Page 91)
M
CAPSTAN MOTOR
CAPSTAN FG SENOR
(See Page 91)
M
LOADING MOTOR
C OUT
C START
C IN
ROTARY SWITCH (MECHA POSITION)
DEW SENSOR
T REEL FG
TAKE-UP END SENSOR
TAPE LED
SUPPLY END SENSOR
S REEL FG
REC SAFTY
4 BOARD (See Page 85)
IC001
TIMER/ MODE CONTROL
SI,SO,SCLK
S002~004
FUNCTION KEY
DUAL MODE SHUTTLE (See Page 87)
SHUTTLE RING PLAY,STOP KEY
KMO 0,2,3, KMI 0~3
SWITCH BLOCK (See Page 87)
FUNCTION KEY
KMO 0-3 , KMI 4~7
MF-155 BOARD (See Page 85)
POWER,EJECT KEY
AD2
IC051
REMOTE CONTROL RECEIVER
ND001
FLUORESCENT DISPLAY
POWER BLOCK
(See Page 95)
(See Page 99)
MTR 12V
SW 12V
UNSW 5.9V
SW 5V
+45V
-30V
DC3.6,DCOV
POWER ON
POWER SUPPLY
AC IN

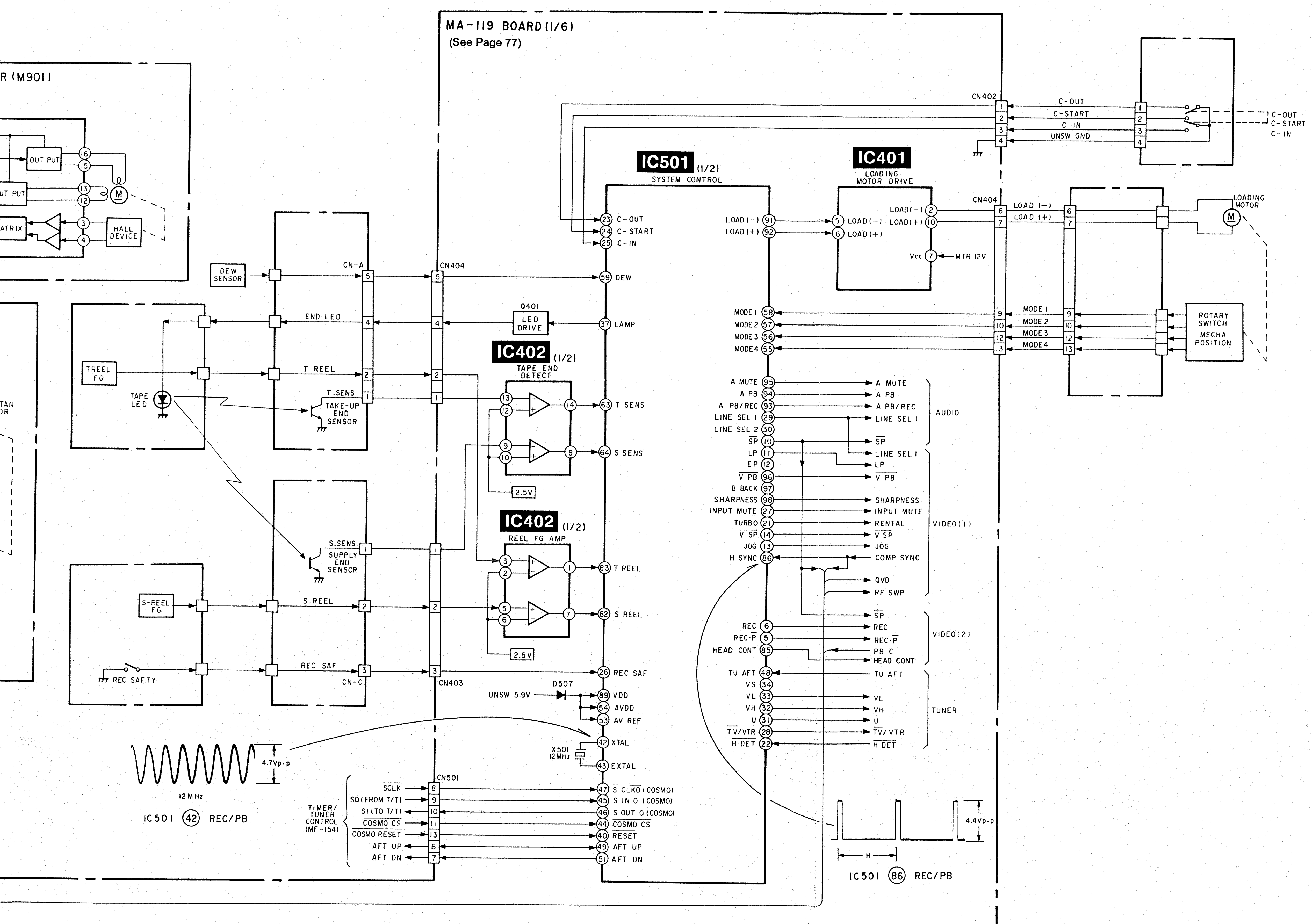
## 3-3. VIDEO BLOCK DIAGRAM


RP-130 BOARD
(See Page 63)
IC801
REC/PB AMP
MA-119 BOARD (1/6)
(See Page 77)
YC-120 BOARD
(See Page 69)
IC001
Y, CHROMA PROCESS
IC004
PAL/SECAM DISCRIMINATOR
VIDEO HEAD
SP CH1
SP CH2
EP CH2
EP CH1
CN801
CN802
CN803
CN101
SP CH1 PB AMP
SP CH2 PB AMP
EP CH2 PB AMP
EP CH1 PB AMP
DET
COMP
PB RF AGC AMP
AGC DET
PB RF AMP
BUFFER
CHROMA TRAP
PB RF EQUALIZER
CHARACTER SWITCH
PAL 60 SWITCH
AMP
SP REC AMP
EP REC AMP
REC RF AGC AMP
T PLAY DET
REC DET
REC IDLE CURRENT ADJ
LOGIC
Q801 REC CURRENT SW
Q802 REC CURRENT SW
SP REC: ON
EP REC: ON
PB: ON
SW 5V
SW 9V
PB Y RF
PB C
JOG
REC Y RF
REC C
C ROT
COMP SYNC
REC
REC P
HEAD CONT
PAL 60
RF SWP
PB RF
REC CUR
COMP SYNC (CN102 ⑪)
SYSTEM CONTROL
SERVO
CHECK PIN
CN802 ⑦ PB
CN802 ⑪ REC
IC801 ㉓, ㉗ PB
CN802 ⑮ PB
CN802 ③ REC
IC001 ㊵ REC
IC801 ㉙ REC
IC801 ⑲ REC/PB
IC801 ㉑ REC/PB
IC001 ② PB
IC001 ③ REC
IC001 ㊶ REC/PB
IC001 ⑮ REC
IC001 ⑮ PB
0.6Vp-p
1Vp-p
0.55Vp-p
0.36Vp-p
0.12Vp-p
0.4Vp-p
5Vp-p
2.4Vp-p
1.2Vp-p
0.36Vp-p
0.14Vp-p
0.28 μsec
DE EMPHASIS TIME CONSTANT
RV005 PB LEVEL
RV003 SYNC AGC
RV004 DEVIATION
RV002 CARRIER
RV006 REC CHROMA
RV008 SECAM DET
42V REG
DOC DET
DOUBLE LIMITER
FM DEMOD
SUB LPF (200NS)
MAIN DE EMPH
CLAMP
FM MOD
1/2FH SHIFT
REC Y BUFFER
627KHz TRAP
W/D CLIP
MAIN EMPH
NL EMPH
DETAIL ENH
TIME CONSTANT SWITCH
PB C LPF
Q018 BUFFER & SW
REC C BUFFER
SECAM ACK
ATT SW
LIMITER & BURST GATE
PAL/SECAM DET
BPF
CF001
T001
BGP (IC001 ㊱)
PAL60 (Q009)
Q010, 025
Q001
Q002
Q019
Q022
Q110
KILL
1MHz LPF
628 AMP
ACC AMP
3.5MHz LPF
BUFFER
CHROMA TRAP


IC002
IC001 ③ PB
0.6Vp-p
SW9V
VCC
CLOCK
8.86MHz (IC001 ㉑)
1H DELAY (CCD)
Q016 BUFFER
LPF
Q017 BUFFER
Q033 ATT SW
V SP (Q015)
IC001 ⑩ REC
0.5Vp-p
IC001 ⑩ PB
IC001 ㉞ REC
2Vp-p
IC001 ㉞ PB
ATT
VCA
LIM
K
CORR
DOC
NOR
REC
PB
NL DE EMPH
WHP NOICAN
PICTURE CONTROL
Y/C MIX
PB Y
PB C
FBC
QVD INSERT
VIDEO AMP
VIDEO AGC
AGC DET
LPF
DELAY
SYNC SEP
HALF H KILLER
BGP GEN
H SYNC
BGP 1
BGP 2
BGP (IC004)
PAL 60 (Q009)
1/2
REC Y
6dB AMP
3.5MHz LPF 500NS
CLAMP
IC001 ㉜ REC/PB
4.3Vp-p
Vcc 2 ㉘
Vcc 1 ㉟
SW 5V
IC001 ㊲ REC
1Vp-p
PAL 60 (IC002 ⑫)
DL001
2H COMB FILTER
Q005, 006
Q007 DRIVE
DL002
1H COMB FILTER
IC001 ㉕ PB
IC001 ㉕ REC
0.9Vp-p
COMB DRIVER AMP
AMP
MES
PAL / SECAM DET
BPF
B DEEM KILLER
ATT
REC C
PB C
ACC AMP
BURST EMPH
MAIN CONV
BGP 1
5.06MHz
4.43MHz BPF
B.G
LP
SP
ACC DET
BGP 2
5.06MHz BPF
SUB CONV
627KHz
4.43MHz
5.06MHz
H SYNC
REC AFC DET
AFC/APC ERROR
SLD
PB APC DET
321FH VCO
ID DET
4 PHASE SHIFTER
H SYNC
C ROT
DIVIDE
1/2
3RD LOCK PROTECT
X2
8.86MHz BPF
8.86MHz
XO
X001 4.43MHz
VXO
REC APC DET
APC ERROR
KIL DET
KIL
Q021
CN002
SHP
SECAM ACK
V OUT
V IN
SYNC
Q. VD
VSP·RENTAL
Q034
LP
JOG
RENTAL
PAL 60
Q008, 009
4.43 NTSC
Q014
V. PB
V. SP
Q015
SWP
MA-119 BOARD (1/6)
(See Page 77)
Q307 Ⓔ PB
CN102
Q302
B.BACK
SHARPNESS
Q307 Ⓔ REC
CN501
MF-154 BOARD (1/2)
(See Page 85)
RV001 SHARPNESS
CN001
IC901 ⑧ REC
Q301
CHROMA BPF
IC301
CHARACTER GENERATOR
Q307 BUFFER
DISPLAY CONTROL OUTPUT CONTROL
V OUT
Q305 BUFFER
Q901~903 VIDEO OUT AMP
RFU VIDEO
TU VIDEO
TUNER
IC901
VIDEO INPUT SELECT
CN1001
VIDEO LINE OUT
VIDEO LINE IN
IC302
AFC
SYNC SEP
V SYNC SEP
BUSY
CLK
STB
DATA
CHARACTER GENERATOR
INT/EXT SWITCH
INTERNAL SYNC GENERATER
X301 17.7MHz
LC OSC
VDD
UNSW5.9V
D507
SW 5V
COMP SYNC
CN501
BUSY
STROBE
SO(FROM T/T)
SCLK
TIMER/MODE CONTROL MF-154
B.BACK (IC501 ㊲)
LINE SEL 1 (IC501 ㉙)
INPUT MUTE (IC501 ㉗)
QVD (IC501 ②)
LP (IC501 ⑪)
RENTAL (IC501 ㉑)
Q103
JOG (IC501 ⑬)
SHARPNESS (IC501 ㊳)
COMP SYNC (IC501 (66)(86))
V SP (IC501 ⑭)
V PB (IC501 ㉒)
RF SWP (IC501 ①)
NTSC PB (IC501 ⑰)
SYSTEM 2 (IC501 ⑮)
PAL 60
4.43NTSC
SYSTEM CONTROL
RF SUP
CN101
CN001
IC001 ㉙ REC
0.26Vp-p
IC001 ㉙ PB
0.46Vp-p
IC003
NTSC4.43 → QUASI PAL CONVERSION
4.43 NTSC (CN002 ⑯)
PAL 60 (Q009)
Q003, 004
PAL
6dB AMP
HD MMV
PHASE DET
GCR
SW CONT
1/2
FH VCO
BPG MMV
+45° SHIFT
-45° SHIFT
RV007 AFC
SYNC (IC001 ㉜)
0.65Vp-p
4.43MHz
IC001 ⑱ REC
0.8Vp-p
4.43MHz
IC001 ⑱ PB

## 3-4. SERVO/SYSTEM CONTROL BLOCK DIAGRAM


DRUM MOTOR.
(See Page 91)
DRUM PG
DRUM FG
D.PG
GND
D.FG
CN-C
CN403
IC407 (1/2)
WAVE SHAPER
IC501 (1/2)
SERVO
DRUM PG
DRUM FG
CAP FG
DRUM D/A
IC403 (1/2)
DRUM ERROR INTEGRATOR
2.5V
MTR 12V
D.VS
DRUM MOTOR (M901)
(See Page 91)
OUT PUT
MATRIX
Vcc
4.4Vp-p
2V
IC501 68 REC/PB
CAPSTAN MOTOR
(See Page 91)
CAPSTAN FG SENSOR
CAP FG AMP
FG
CN401
IC406 (1/2)
CAPSTAN FG AMP
Q402
5.2Vp-p
1.4 msec
IC501 70 REC/PB
4.4Vp-p
1.6 msec
IC501 69 REC/PB
5Vp-p
2V
IC405 10 REC
IC405 (1/2)
REFERENCE VOLTAGE
SW 5V
REF
IC403
CAPSTAIN ERROR INTEGRATOR
CAP D/A
C.VS
CAPSTAN MOTOR (M902)
(See Page 91)
REF
U OUT
V OUT
W OUT
VS
CAPSTAN MOTOR
U(+) U(−) V(+) V(−) W(+) W(−)
HALL DEVICE
LIMIT
FRC
Vcc
CAP STOP
STEP PLS
CAP TRQ1
CAP TRQ2
CAP REV
CAP RVS
SW POSI
RV501
SWITCHING POSITION
CN401
PB CTL
STEP DRIVE
VD CTL
REC INH
REC CTL
IC405 (1/2)
CTL REC/PB AMP
SW 5V
Vcc
INDEX
REC INH
PB
3 VALUE DET
H :REC CTL L
OPEN:PB
RC IN
REC CTL GEN.
TIMING GEN
REC CTL
CTL HEAD
CTL (X)
CTL (Y)
CN405
BIAS (2.4V)
PB CTL AMP
GCA
PB CTL AMP
LEVEL DET
PB CTL LOGIC
CTL OUT
PEAK DET
RTG MMV
DC
AMP GAIN
FWD
TIME CONST
5Vp-p
2V
IC405 1 PB
RF SWP
V SYNC
QVD
D506
QHDENABL
AUTO TRACKING DETECTOR
Q406-408, 410
Q404, 405, 409
VIDEO RF
VIDEO RF ENVELOP DETECT
FREQUENCY CHARACTER CORRECT
PB C
SP
0.18Vp-p
H
IC501 60 REC
5Vp-p
2V
IC501 1 REC/PB


MA-119 BOARD (1/6)
(See Page 77)
R (M901)
OUT PUT
UT PUT
ATRIX
HALL DEVICE
M
DEW SENSOR
CN-A
CN404
END LED
Q401
LED DRIVE
TREEL FG
T REEL
T.SENS
TAKE-UP END SENSOR
TAPE LED
TAN
OR
IC402 (1/2)
TAPE END DETECT
2.5V
S.SENS
SUPPLY END SENSOR
IC402 (1/2)
REEL FG AMP
S-REEL FG
S.REEL
REC SAF
REC SAFTY
CN-C
CN403
UNSW 5.9V
D507
X501 12MHz
4.7Vp-p
12MHz
IC501 (42) REC/PB
TIMER/TUNER CONTROL (MF-154)
CN501
SCLK
SO (FROM T/T)
SI (TO T/T)
COSMO CS
COSMO RESET
AFT UP
AFT DN
IC501 (1/2)
SYSTEM CONTROL
C-OUT
C-START
C-IN
DEW
LAMP
T SENS
S SENS
T REEL
S REEL
REC SAF
VDD
AVDD
AV REF
XTAL
EXTAL
S CLKO (COSMO)
S IN O (COSMO)
S OUT O (COSMO)
COSMO CS
RESET
AFT UP
AFT DN
LOAD(-)
LOAD(+)
MODE 1
MODE 2
MODE 3
MODE 4
A MUTE
A PB
A PB/REC
LINE SEL 1
LINE SEL 2
SP
LP
EP
V PB
B BACK
SHARPNESS
INPUT MUTE
TURBO
V SP
JOG
H SYNC
REC
REC·P
HEAD CONT
TU AFT
VS
VL
VH
U
TV/VTR
H DET
AUDIO
RENTAL
COMP SYNC
QVD
RF SWP
VIDEO(1)
PB C
VIDEO(2)
TUNER
IC401
LOADING MOTOR DRIVE
Vcc
MTR 12V
CN402
C-OUT
C-START
C-IN
UNSW GND
CN404
LOAD (-)
LOAD (+)
LOADING MOTOR
ROTARY SWITCH
MECHA POSITION
4.4Vp-p
H
IC501 (86) REC/PB

## 3-5. SYSTEM CONTROL — MECHANISM BLOCK INTERFACE (MA-119 BOARD IC501)

| Signal | Pin. No. | I/O | EJECTED | CASSETTE LOADING | CASSETTE UNLOAD-ING | TAPE THREAD-ING | TAPE UN-THREAD-ING | STOP | FF | REW | PB | PB· PAUSE | SLOW | ×2 | CUE | REVIEW | REC | REC· PAUSE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| LOAD (–) | MA-119 Board IC501 (91) | O | L | L | L | L | H | L | L | L | L | L | L | L | L | L | L | L |
| LOAD (+) | MA-119 Board IC501 (92) | O | L | L | L | H | L | L | L | L | L | L | L | L | L | L | L | L |
| MODE 1 | MA-119 Board IC501 (58) | I | L | L | L | H | H | H | H | H | H | H | H | H | H | H | H | H |
| MODE 2 | MA-119 Board IC501 (57) | I | L | H | L | L | H | L | L | L | L | H | H | L | L | L | L | H |
| MODE 3 | MA-119 Board IC501 (56) | I | H | H | H | L | H | H | H | H | L | L | L | L | L | L | L | L |
| MODE 4 | MA-119 Board IC501 (54) | I | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| C-OUT | MA-119 Board IC501 ㉓ | I | L | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| C-START | MA-119 Board IC501 ㉔ | I | H | L | L | H | H | H | H | H | H | H | H | H | H | H | H | H |
| C-IN | MA-119 Board IC501 ㉕ | I | H | H | H | L | L | L | L | L | L | L | L | L | L | L | L | L |
| REC SAF | MA-119 Board IC501 ㉖ | I | L | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 | *1 |
| T REEL | MA-119 Board IC501 (83) | I | H/L | H/L | H/L | H/L | H/L | H/L | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 |
| S REEL | MA-119 Board IC501 (82) | I | H/L | H/L | H/L | *2 | *2 | H/L | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 |
| LAMP | MA-119 Board IC501 ㊲ | O | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 | *3 |
| CAP TRQ1 | MA-119 Board IC501 ㉟ | O | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H | H |
| CAP TRQ2 | MA-119 Board IC501 ㊱ | O | H | H | H | H | H | H | H | H | H | H | *4 | H | H | H | H | H |
| CAP STOP | MA-119 Board IC501 ㊳ | O | L | *5 | *5 | *5 | *5 | L | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 | *5 |
| T SENS | MA-119 Board IC501 (63) | I | *3 | *3 | *3 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 |
| S SENS | MA-119 Board IC501 (64) | I | *3 | *3 | *3 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 |

*1. "L" when erasing protection tab is bent. "H" when not bent.
*2. Pulse of period in proportion to reel rotating speed.
*3. Approx. 2 msec period "H" pulse.
*4. Pulse.
*5. 3 value output of "H", "L" and "HIZ (2.5V)".
*6. Normally "L". 2 msec period "H" pulse when tape top or tape end is detected.

## 3-6. SYSTEM CONTROL — SERVO PERIPHERAL CIRCUIT INTERFACE (MA-119 BOARD IC501)

| Signal | Pin. No. | I/O | STOP | FF | REW | TAPE THREAD-ING | TAPE UN-THREAD-ING | PB | PB·PAUSE | SLOW | × 2 | CUE | REVIEW | REC | REC·PAUSE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| REC CTL | MA-119 Board IC501 ⑦ | O | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *14 | *1 | *14 |
| STEP PLS | MA-119 Board IC501 (71) | O | L | *2 | *2 | *2 | *2 | *2 | L | *3 | *2 | *2 | *2 | *2 | L |
| SW POSITION *4 | MA-119 Board IC501 (62) | I |  |  |  |  |  |  |  |  |  |  |  |  |  |
| $\overline{\text{PB CTL}}$ | MA-119 Board IC501 (67) | I | H | *5 | *5 |  |  | *1 | H/L | *3 | *5 | *5 | *5 | *1 | H |
| VD CTL | MA-119 Board IC501 (77) | I | H | *5 | *5 |  |  | *1 | H/L | *3 | *5 | *5 | *5 | *1 | H |
| DRUM PG | MA-119 Board IC501 (68) | I | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 | *6 |
| DRUM FG | MA-119 Board IC501 (69) | I | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 |
| CAP FG | MA-119 Board IC501 (70) | I | H/L | *8 | *8 | *9 | *9 | *8 | H/L | *10 | *8 | *8 | *8 | *8 | H/L |
| CAP RVS | MA-119 Board IC501 (72) | O | H/L | L | H | L | H | L | L | *3 | L | L | H | L | L |
| CAP DA *14 | MA-119 Board IC501 (73) | O | *11 | *11 | *11 | *11 | *11 | *12 | *11 | *11 | *12 | *12 | *12 | *12 | *11 |
| DRUM DA *14 | MA-119 Board IC501 (74) | O | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 | *13 |
| STEP DRIVE | MA-119 Board IC501 (76) | O | L | L | L | L | L | L | L | *15 | L | L | L | L | L |

*1. PAL/SECAM: 25 Hz pulse. NTSC: 30 Hz pulse.
*2. 3 value output of "H", "L" and Hi-Z (2.5V).
*3. Unstable period Pulse.
*4. Input terminal for video switching position adjustment.
*5. Pulse of period in proportion to tape speed.
*6. PAL/SECAM: 25 Hz "H" pulse. NTSC: 30 Hz "H" pulse.
*7. PAL/SECAM: 600 Hz pulse. NTSC: 720 Hz pulse.
*8. Pulse of period in proportion to tape speed.
*9. Unstable period pulse.
*10. Pulse at tape running.
*11. Approx. 2 msec period "H" or "L" pulse.
*12. Approx. 1.5 msec period "H" or "L" pulse.
*13. Approx. 3 msec period "H" or "L" pulse.
*14. HI-Z (2.5V).
*15. "H" when FWD direction and STEP drive.

## 3-7. SYSTEM CONTROL — SYSTEM CONTROL PERIPHERAL CIRCUIT INTERFACE (MA-119 BOARD IC501)

| Signal | Pin. No. | I/O | I/O level |
|---|---|---|---|
| COSMO•RESET | MA-119 Board IC501 ㊵ | I | Normally "H". "L" when service interruption is detected or restored. |
| COSMO•CS | MA-119 Board IC501 ㊹ | I | Chip select signal from timer microprocessor. V period "L" pulse. |
| SI•BUS | MA-119 Board IC501 ㊺ | I | Serial communication data to timer microprocessor. V period "L" pulse. |
| SO•BUS | MA-119 Board IC501 ㊻ | O | Serial communication data to timer microprocessor. V period "L" pulse. |
| S CLK | MA-119 Board IC501 ㊼ | I | Serial communication clock with timer microprocessor. V period "L" pulse. |

## 3-8. SYSTEM CONTROL AND RF MODULATOR — INPUT SELECTION BLOCK INTERFACE (MA-119 BOARD IC501)

| Signal | Pin. No. | I/O | I/O level |
|---|---|---|---|
| TV/VTR | MA-119 Board IC501 ㉘ | O | Not used. |
| LINE | MA-119 Board IC501 ㉙ | O | Input select control signal. |

### 3-9. SYSTEM CONTROL — VIDEO BLOCK INTERFACE (MA-119 BOARD IC501)

| Signal | Pin. No. | I/O | STOP/ FF/ REW | TAPE LOADING | TAPE UN-LOAD-ING | PB | PB• PAUSE | SLOW | × 2 | CUE | REVIEW | REC | REC• PAUSE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| V-PB | MA-119 Board IC501 (96) | O | H | H | H | L | L | L | L | L | L | H | H |
| HEAD CONT | MA-119 Board IC501 (85) | O | L | L | L | L | H | *1 | H | L | L | H | L |
| RF SW P. | MA-119 Board IC501 ① | O | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 | *2 |
| Q VD | MA-119 Board IC501 ② | O | L | L | L | *3 | *4 | *4 | *4 | *4 | *4 | L | L |
| SP | MA-119 Board IC501 ⑩ | O | *5 | *5 | *5 | *6 | *6 | *6 | *6 | *6 | *6 | *5 | *5 |
| LP | MA-119 Board IC501 ⑪ | O | *5 | *5 | *5 | *6 | *6 | *6 | *6 | *6 | *6 | *5 | *5 |
| EP | MA-119 Board IC501 ⑫ | O | L | L | L | *6 | *6 | *6 | *6 | *6 | *6 | L | L |
| REC. P | MA-119 Board IC501 ⑤ | O | L | L | L | L | L | L | L | L | L | L | H |
| REC | MA-119 Board IC501 ⑥ | O | L | L | L | L | L | L | L | L | L | H | H |
| V SYNC | MA-119 Board IC501 (66) | I | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 | *7 |
| BLUE BACK | MA-119 Board IC501 (97) | O | *8 | *8 | *8 | *8 | *8 | *8 | *8 | *8 | *8 | *8 | *8 |

*1. "H" when tape stops. "L" when tape runs (PAL/SECAM: approx. for 40 msec).
*2. Synchronized with drum rotation. PAL/SECAM: 25 Hz 50% duty pulse. NTSC: 30 Hz 50% duty pulse.
*3. Normally "L". "H" when video signal is not generated.
*4. V period "H" pulse.
*5. Selected by SP/LP selector. SP mode: "L", LP mode: "H".
*6. Selected by tape recording mode.

| sig/mod | SP | LP | EP |
|---|---|---|---|
| SP (10) | L | H | H |
| LP (11) | L | H | L |
| EP (12) | L | L | H |

*7. Composite sync signal (positive).
*8. "H" when menu screen or blue back screen.

### 3-10. SYSTEM CONTROL — AUDIO BLOCK INTERFACE (MA-119 BOARD IC501)

| Signal | Pin. No. | I/O | STOP/ FF/ REW | TAPE LOADING | TAPE UN-LOAD-ING | PB | PB• PAUSE | SLOW | × 2 | CUE | REVIEW | REC | REC• PAUSE |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| A PB | MA-119 Board IC501 (94) | O | L | L | L | H | H | H | H | H | H | L | L |
| A MUTE | MA-119 Board IC501 (95) | O | L | L | L | L | H | H | H | H | H | L | L |
| A PB/REC | MA-119 Board IC501 (93) | O | L | L | L | L | L | L | L | L | L | H | L |
| $\overline{SP}$ | MA-119 Board IC501 ⑩ | O | *1 | *1 | *1 | *2 | *2 | *2 | *2 | *2 | *2 | *1 | *1 |

*1. Selected by SP/LP selector. SP mode: "L", LP mode: "H".

*2. Selected by tape recording mode. SP mode: "L", LP mode: "H".

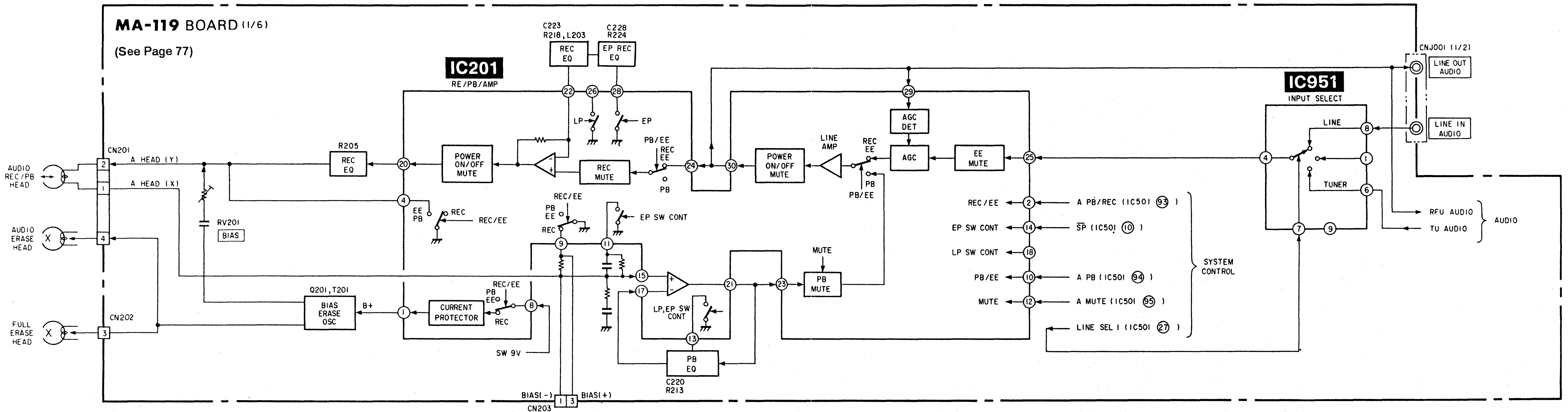
## 3-11. SERVO/SYSTEM CONTROL — MICROPROCESSOR TERMINAL FUNCTION (MA-119 BOARD IC501)

| Pin. No. | Port | I/O | Name | Function |
|---|---|---|---|---|
| 1 | PB5/PPO13 | O | RF SWP | Video switching pulse output. |
| 2 | PB4/PPO12 | O | Q VD | Quasi VD pulse output. |
| 3 | PB3/PPO11 | O | Q HD ENABLE | Quasi HD control. |
| 4 | PB2 | O | AMS | AMS control output. Not used. |
| 5 | PB1 | O | REC•$\overline{\text{P}}$ | "H" output when video REC (REC control). |
| 6 | PB0 | O | REC | "H" output when REC. |
| 7 | PC7 | O | REC CTL | REC CTL output. |
| 8 | PC6 | O | INT VD | Not used. |
| 9 | PC5 | O | PB | "H" when normal audio playback. Not used. |
| 10 | PC4 | O | $\overline{\text{SP}}$ | "L" when SP mode. |
| 11 | PC3 | O | LP | "H" when LP mode. |
| 12 | PC2 | O | EP | "H" when EP mode. Not used. |
| 13 | PC1 | O | $\overline{\text{JOG}}$ | "L" when special playback. |
| 14 | PC0 | O | $\overline{\text{V SP}}$ | SP mode for video system. |
| 15 | PJ7 | O | SYSTEM 2 | Vidoe system select signal. "H" when NTSC 4.43 playback. |
| 16 | PJ6 | O | SYSTEM 1 | Not used. |
| 17 | PJ5 | O | NTSC (SEC) PB | "H" when NTSC (SECAM) playback. |
| 18 | PJ4 | I | PAL M JUDGE | "H" when video system is PAL-M mode. Not used. |
| 19 | PJ3 | O | PAL M HOLD | "L" when special playback on NTSC, "L" when special playback on PAL-M. Not used. |
| 20 | PJ2 | O | C ROT STOP | "H" when stop. Not used. |
| 21 | PJ1 | O | TURBO | "H" when RENTAL PICTURE. |
| 22 | PJ0 | I | $\overline{\text{H DET}}$ | H sync detection input. |
| 23 | PD7 | I | C-OUT | Cassette switch input. |
| 24 | PD6 | I | C-START | |
| 25 | PD5 | I | C-IN | |
| 26 | PD4 | I | REC SAF | Erasing protection tab detection. |
| 27 | PD3 | O | INPUT MUTE | Line input (video system) muting. |
| 28 | PD2 | O | $\overline{\text{TV}}$/VTR | Antenna output select signal. "H": VTR, "L": TV. Not used. |
| 29 | PD1 | O | LINE SEL 1 | "H" when LINE 1. |
| 30 | PD0 | O | LINE SEL 2 | Not used. |
| 31 | PH7 | O | U | Tuner band select signal. |
| 32 | PH6 | O | VH | |
| 33 | PH5 | O | VL | |
| 34 | PH4 | O | VS | Not used. |
| 35 | PH3 | O | CAP TRQ 1 | Current drive capstan motor control. |
| 36 | PH2 | O | CAP TRQ 2 | |
| 37 | PH1 | O | LAMP | End sensor lamp drive output. |
| 38 | PH0 | O | CAP STOP | Capstan STOP signal output. |
| 39 | MP | I | MP | Fixed "L" level. |
| 40 | $\overline{\text{RST}}$ | I | $\overline{\text{COSMO RST}}$ | System reset input. |
| 41 | Vss | | Vss | GND |
| 42 | XTAL | O | XTAL | System clock 12 MHz. |
| 43 | EXTAL | I | EXTAL | |
| 44 | $\overline{\text{CS0}}$ | O | $\overline{\text{COSMO CS}}$ | Chip select signal. |
| 45 | SI0 | I | S IN 0 | Signal for serial communication. |

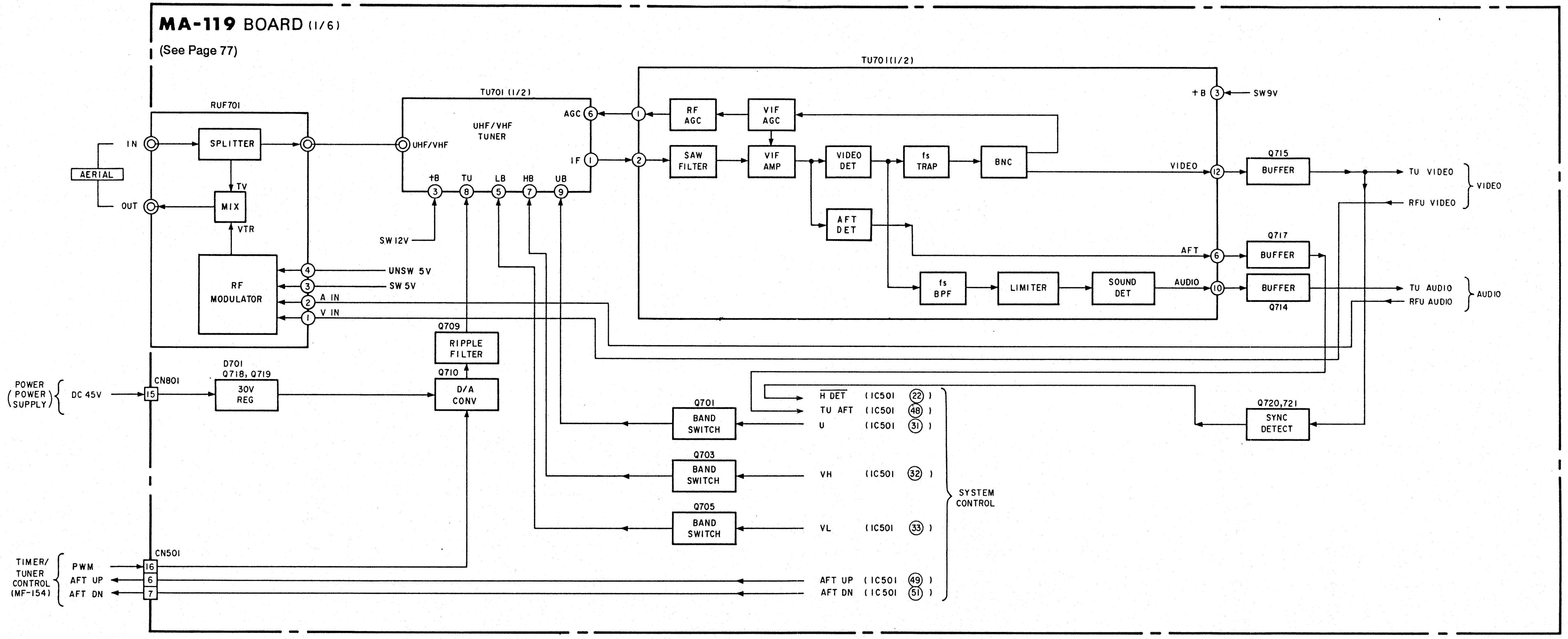
| Pin. No. | Port | I/O | Name | Function |
|---|---|---|---|---|
| 46 | SO0 | O | S OUT 0 | Signal for serial communication. |
| 47 | $\overline{\text{SCK0}}$ | O | $\overline{\text{SCLK 0}}$ | Clock for serial communication. |
| 48 | PF7/AN11 | I | TU AFT | Tuner analog AFT input. |
| 49 | PF6/AN10 | O | AFT UP | AFT UP. |
| 50 | PF5/AN9 | I | DEST | Destination selection. |
| 51 | PF4/AN8 | O | AFT DOWN | AFT down. |
| 52 | AVss | | AVss | UNSW GND. |
| 53 | AVREF | | AVREF | AD port reference input. UNSW 5V. |
| 54 | AVDD | | AVDD | UNSW 5V. |
| 55 | PF3/AF7 | I | MODE4 | Mechanism section CAM encoder input. |
| 56 | PF2/AN6 | I | MODE3 | |
| 57 | PF1/AN5 | I | MODE2 | |
| 58 | PF0/AN4 | I | MODE1 | |
| 59 | AN3 | I | DEW | DEW sensor analog input. |
| 60 | AN2 | I | VIDEO RF | Video RF envelope input. |
| 61 | AN1 | I | N.C. | Not used. |
| 62 | AN0 | I | SW POSI | VR input for RF SWP adjustment. |
| 63 | PG7 | I | T SENSOR | Take-up side end sensor input. |
| 64 | PG6 | I | S SENSOR | Supply side end sensor input. |
| 65 | PG5 | I | N.C. | Not used. |
| 66 | PG4/SYNC | I | V SYNC | Composite sync input. |
| 67 | PG3/$\overline{\text{PBCTL}}$ | I | $\overline{\text{PB CTL}}$ | Playback CTL input |
| 68 | PG2/DPG | I | DRM PG | Drum PG input. |
| 69 | PG1/DFG | I | DRM FG | Drum FG input. |
| 70 | PG0/CFG | I | CAP FG | Capstan FG input. |
| 71 | PE7 | O | STEP PULS | "L" when capstan STEP is driven. |
| 72 | PE6 | O | CAP RVS | Capstan reverse signal output. |
| 73 | PE5 | O | CAP DA | Capstan error D/A output. |
| 74 | PE4 | O | DRUM DA | Drum error D/A output. |
| 75 | PE3 | O | MEM CS | EEPROM chip select. Not used. |
| 76 | PE2 | O | STEP DRIVE | CTL amp step action control. |
| 77 | PE1 | I | VD CTL | Playback CTL input. |
| 78 | PE0 | | N.C. | Not used. |
| 79 | SI1 | I | S IN 1 | |
| 80 | SO1 | O | S OUT 1 | |
| 81 | $\overline{\text{SCK1}}$ | | $\overline{\text{SCK 1}}$ | |
| 82 | PI4 | I | S REEL | S reel sensor input. |
| 83 | PI3 | I | T REEL | T reel sensor input. |
| 84 | PI2/$\overline{\text{PWM}}$ | O | BUZZER | Not used. |
| 85 | PI1/RMC | O | HEAD CONT | Head amp IC control. |
| 86 | TEX | I | H SYNC | H sync input. |
| 87 | TX | | N.C. | Not used. |
| 88 | Vss | | Vss | GND |
| 89 | VDD | | VDD | UNSW 5V. |
| 90 | N.C. | | N.C. | Not used. |

| Pin. No. | Port | I/O | Name | Function |
|---|---|---|---|---|
| 91 | PA7 | O | LOAD (–) | Loading motor control. |
| 92 | PA6 | O | LOAD (+) | |
| 93 | PA5 | O | A PB/REC | Normal audio bias oscillation ON/OFF. |
| 94 | PA4 | O | A PB | "H" when audio playback. |
| 95 | PA3 | O | A MUTE | Audio muting output. "H": muting. |
| 96 | PA2 | O | $\overline{\text{V-PB}}$ | "L" when video playback. |
| 97 | PA1 | O | BLUE BACK | Compulsion blue back. "H": blue back. |
| 98 | PA0 | O | SHARPNESS | Sharpness control (for TURBO PICTURE). |
| 99 | PB7 | O | HEAD SEL | Video head select signal. Not used. |
| 100 | PB6/PPO14 | O | $\overline{\text{REC INH}}$ | CTL amp REC inhibit. |

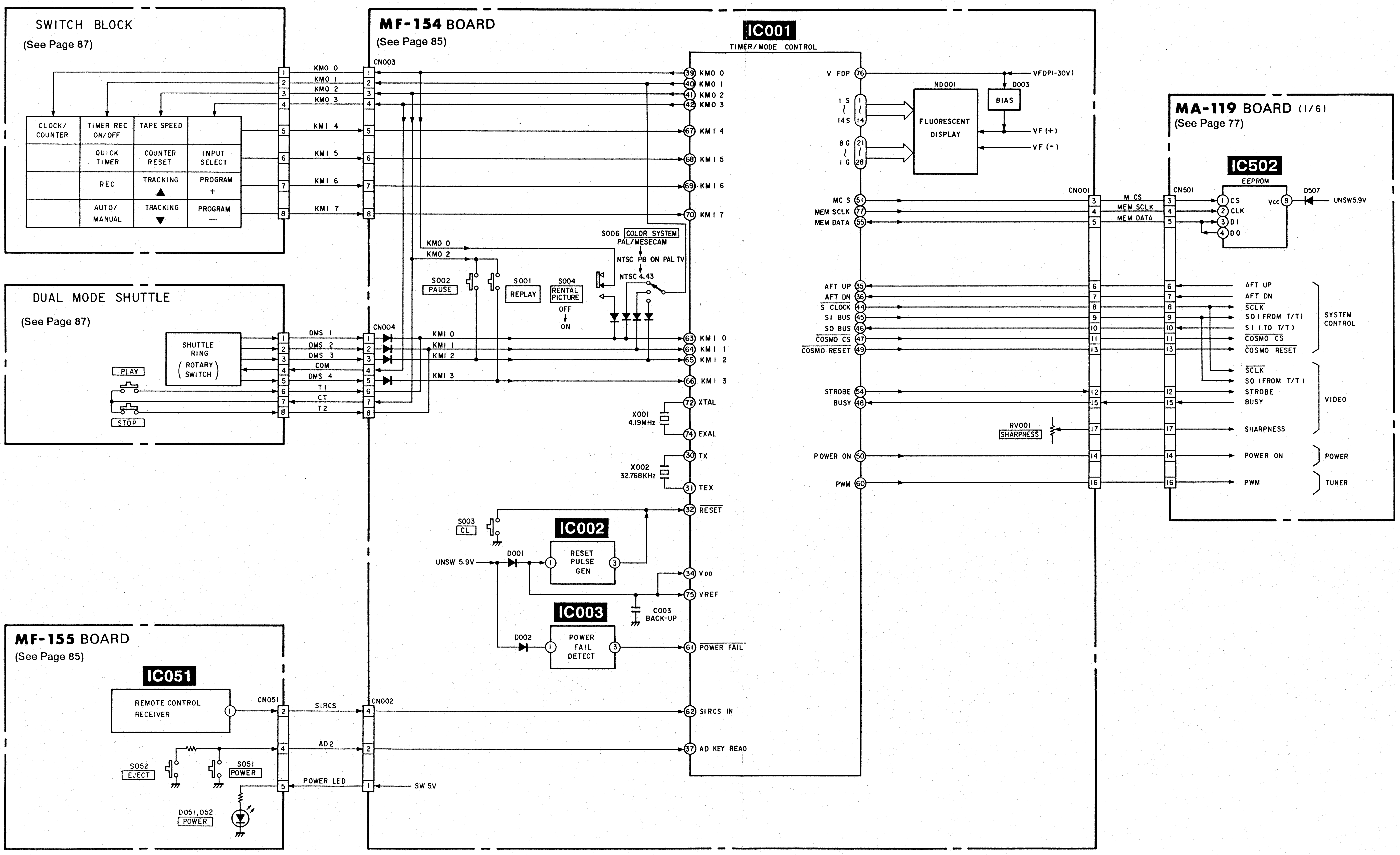
## 3-12. AUDIO BLOCK DIAGRAM


MA-119 BOARD (1/6)
(See Page 77)
IC201
RE/PB/AMP
IC951
INPUT SELECT
C223
R218, L203
C228
R224
REC EQ
EP REC EQ
LP
EP
PB/EE
REC
EE
PB
POWER ON/OFF MUTE
REC MUTE
R205
REC EQ
AUDIO REC/PB HEAD
AUDIO ERASE HEAD
FULL ERASE HEAD
CN201
CN202
CN203
A HEAD (Y)
A HEAD (X)
RV201
BIAS
Q201, T201
BIAS ERASE OSC
B+
CURRENT PROTECTOR
REC/EE
EE
PB
REC/EE
EP SW CONT
LP, EP SW CONT
PB EQ
C220
R213
SW 9V
BIAS(-)
BIAS(+)
LINE AMP
AGC DET
AGC
EE MUTE
MUTE
PB MUTE
PB/EE
REC/EE
EP SW CONT
LP SW CONT
PB/EE
MUTE
A PB/REC (IC501 93)
SP (IC501 10)
A PB (IC501 94)
A MUTE (IC501 95)
LINE SEL 1 (IC501 27)
SYSTEM CONTROL
LINE
TUNER
CNJ001 (1/2)
LINE OUT AUDIO
LINE IN AUDIO
RFU AUDIO
TU AUDIO
AUDIO

## 3-13. TUNER BLOCK DIAGRAM


MA-119 BOARD (1/6)
(See Page 77)
RUF701
AERIAL
IN
OUT
SPLITTER
TV
MIX
VTR
RF MODULATOR
4 UNSW 5V
3 SW 5V
2 A IN
1 V IN
TU701 (1/2)
UHF/VHF TUNER
UHF/VHF
AGC 6
IF 1
+B 3
TU 8
LB 5
HB 7
UB 9
SW 12V
Q709
RIPPLE FILTER
Q710
D/A CONV
POWER (POWER SUPPLY)
DC 45V
CN801
15
D701
Q718, Q719
30V REG
TIMER/ TUNER CONTROL (MF-154)
PWM
AFT UP
AFT DN
CN501
16
6
7
TU701 (1/2)
1
2
RF AGC
VIF AGC
SAW FILTER
VIF AMP
VIDEO DET
fs TRAP
BNC
AFT DET
fs BPF
LIMITER
SOUND DET
+B 3
SW9V
VIDEO 12
AFT 6
AUDIO 10
Q715
BUFFER
Q717
BUFFER
BUFFER
Q714
TU VIDEO
RFU VIDEO
VIDEO
TU AUDIO
RFU AUDIO
AUDIO
Q720,721
SYNC DETECT
H DET (IC501 ㉒)
TU AFT (IC501 ㊽)
U (IC501 ㉛)
Q701
BAND SWITCH
Q703
BAND SWITCH
VH (IC501 ㉜)
Q705
BAND SWITCH
VL (IC501 ㉝)
AFT UP (IC501 ㊾)
AFT DN (IC501 (51))
SYSTEM CONTROL

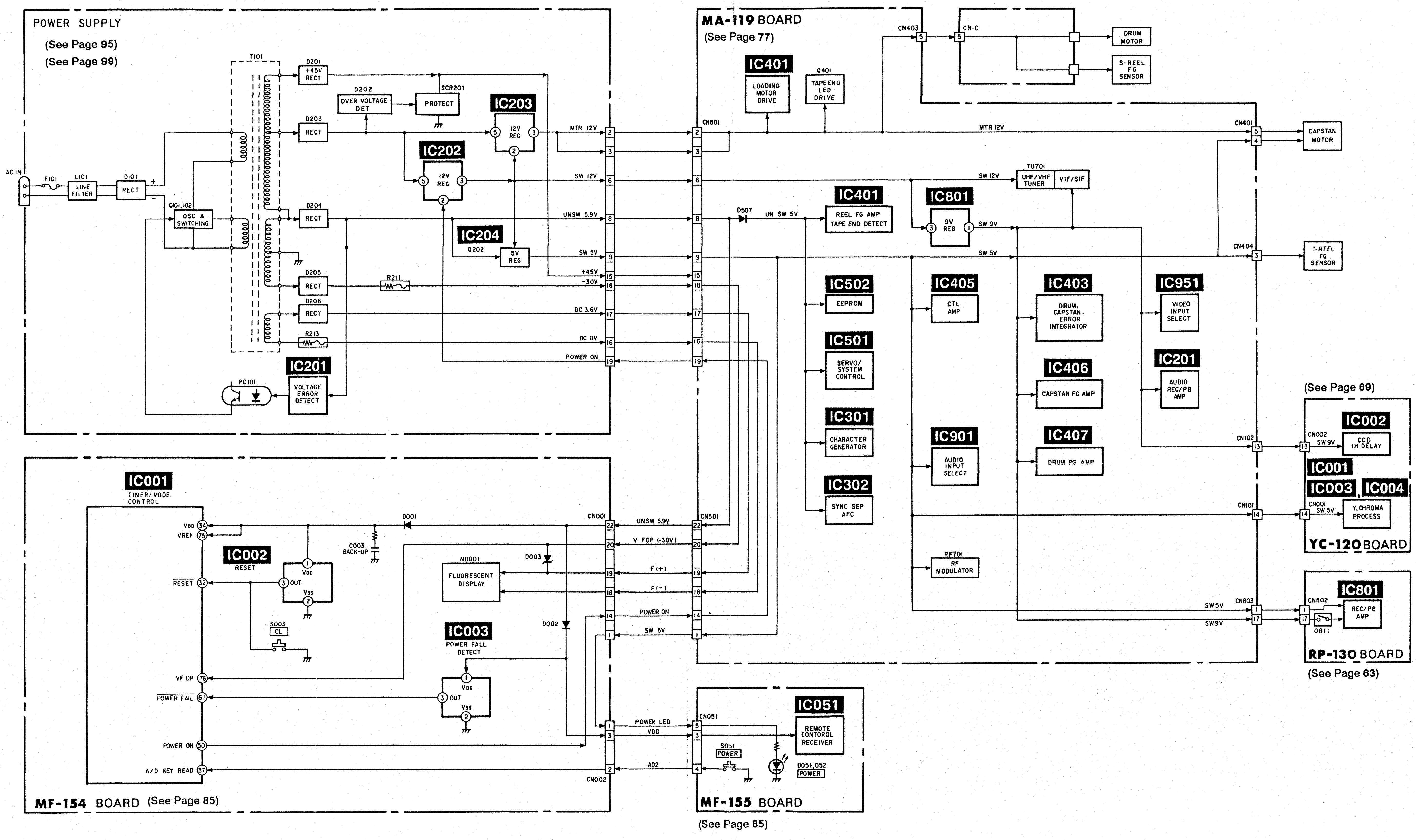
## 3-14. TIMER/MODE CONTROL BLOCK DIAGRAM


SWITCH BLOCK
(See Page 87)
CLOCK/ COUNTER
TIMER REC ON/OFF
TAPE SPEED
QUICK TIMER
COUNTER RESET
INPUT SELECT
REC
TRACKING ▲
PROGRAM +
AUTO/ MANUAL
TRACKING ▼
PROGRAM —
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
DUAL MODE SHUTTLE
(See Page 87)
SHUTTLE RING
( ROTARY SWITCH )
PLAY
STOP
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
MF-154 BOARD
(See Page 85)
CN003
CN004
KMI 0
KMI 1
KMI 2
KMI 3
S002 PAUSE
S001 REPLAY
S004 RENTAL PICTURE
OFF
ON
S006 COLOR SYSTEM
PAL/MESECAM
NTSC PB ON PAL TV
NTSC 4.43
IC001
TIMER/MODE CONTROL
39 KMO 0
40 KMO 1
41 KMO 2
42 KMO 3
67 KMI 4
68 KMI 5
69 KMI 6
70 KMI 7
63 KMI 0
64 KMI 1
65 KMI 2
66 KMI 3
72 XTAL
74 EXAL
30 TX
31 TEX
32 RESET
34 VDD
75 VREF
61 POWER FAIL
62 SIRCS IN
37 AD KEY READ
X001 4.19MHz
X002 32.768KHz
S003 CL
IC002
RESET PULSE GEN
UNSW 5.9V
D001
IC003
POWER FAIL DETECT
D002
C003 BACK-UP
V FDP 76
1S ~ 14S
8G ~ 1G
ND001
FLUORESCENT DISPLAY
BIAS
D003
VFDP(-30V)
VF (+)
VF (-)
MC S 51
MEM SCLK 77
MEM DATA 55
AFT UP 35
AFT DN 36
S CLOCK 44
SI BUS 45
SO BUS 46
COSMO CS 47
COSMO RESET 49
STROBE 54
BUSY 48
RV001 SHARPNESS
POWER ON 50
PWM 60
CN001
MA-119 BOARD (1/6)
(See Page 77)
CN501
M CS
MEM SCLK
MEM DATA
IC502
EEPROM
CS
CLK
DI
DO
Vcc
D507
UNSW5.9V
AFT UP
AFT DN
SCLK
SO (FROM T/T)
SI (TO T/T)
COSMO CS
COSMO RESET
SYSTEM CONTROL
SCLK
SO (FROM T/T)
STROBE
BUSY
VIDEO
SHARPNESS
POWER ON
POWER
PWM
TUNER
MF-155 BOARD
(See Page 85)
IC051
REMOTE CONTROL RECEIVER
CN051
CN002
SIRCS
AD2
POWER LED
SW 5V
S052 EJECT
S051 POWER
D051,052 POWER

### 3-15. TIMER/MODE CONTROL — MICROPROCESSOR TERMINAL FUNCTION (MF-154 BOARD IC001)

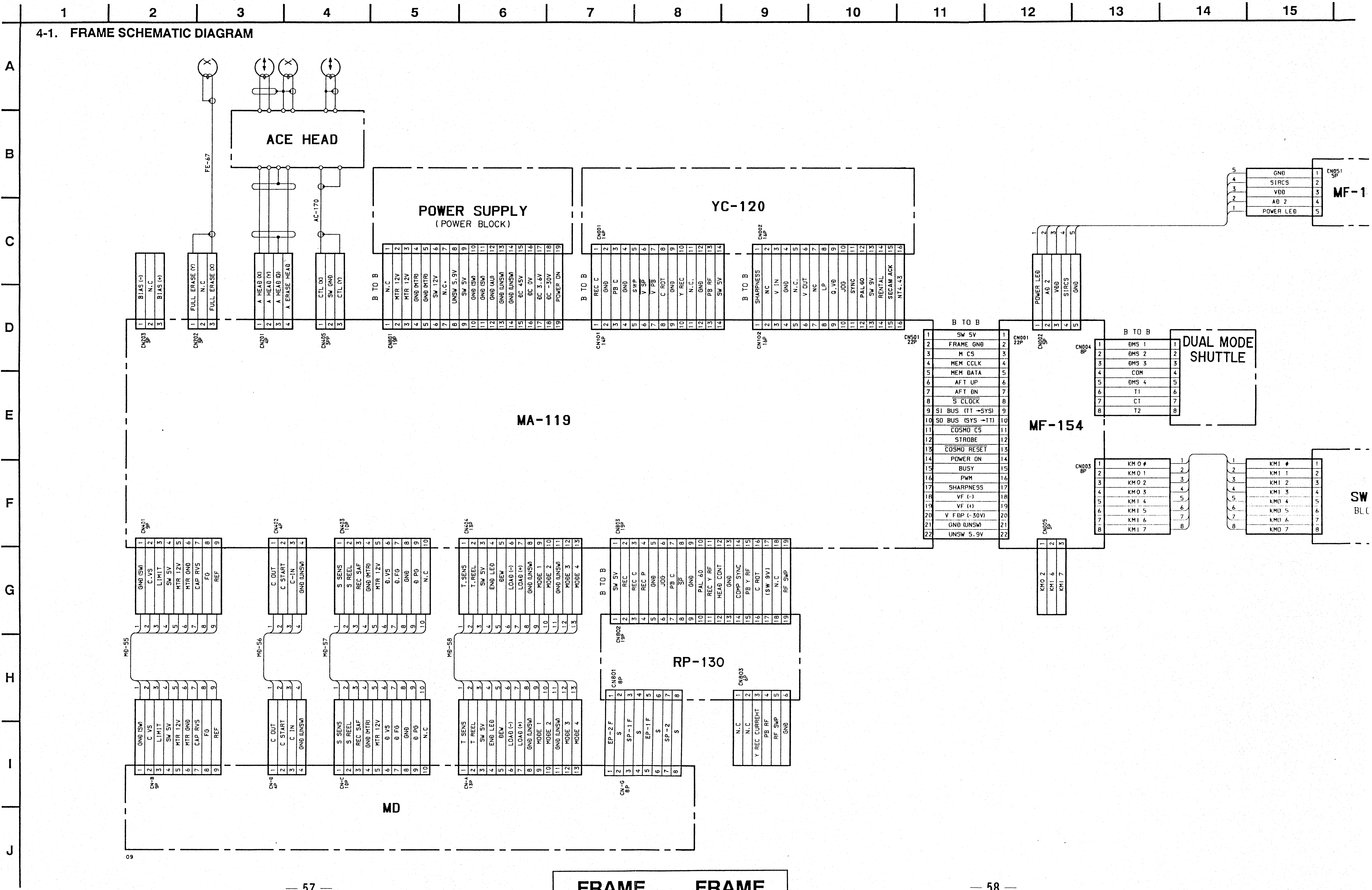
| Pin. No. | Port | I/O | Signal | Function |
|---|---|---|---|---|
| 1 | S4 | O | S1 | Display segment signal. |
| 2 | S5 | O | S9 | |
| 3 | S6 | O | S3 | |
| 4 | S7 | O | S4 | |
| 5 | S8 | O | S5 | |
| 6 | S9 | O | S6 | |
| 7 | S10 | O | S7 | |
| 8 | S11 | O | S8 | |
| 9 | S12 | O | S2 | |
| 10 | S13 | O | S10 | |
| 11 | S14 | O | S11 | |
| 12 | S15 | O | S12 | |
| 13 | S16 | O | S13 | |
| 14 | S17 | O | S14 | |
| 15 | S18 | O | | Not used. |
| 16 | S19 | O | | |
| 17 | T11 | O | | |
| 18 | T10 | O | | |
| 19 | T9 | O | | |
| 20 | T8 | O | | |
| 21 | T7 | O | 8G | Display timing signal. |
| 22 | T6 | O | 7G | |
| 23 | T5 | O | 6G | |
| 24 | T4 | O | 5G | |
| 25 | T3 | O | 4G | |
| 26 | T2 | O | 3G | |
| 27 | T1 | O | 2G | |
| 28 | T0 | O | 1G | |
| 29 | INT | I | | GND |
| 30 | TX | | TX | Clock for back-up |
| 31 | TEX | | ETX | |
| 32 | $\overline{\text{RST}}$ | I | $\overline{\text{RST}}$ | Reset signal input. |
| 33 | N.C. | | | Not used. |
| 34 | VDD | | VDD | 5V power supply. |
| 35 | AD0 | I | AFT UP | AFT up. |
| 36 | AD1 | I | AFT DOWN | AFT down. |
| 37 | AD2 | I | A/D KEY IN | Key input (EJECT/POWER). |
| 38 | AD3 | I | | Not used. |
| 39 | AD4 | O | KMO0 | Key matrix output. |
| 40 | AD5 | O | KMO1 | |
| 41 | AD6 | O | KMO2 | |
| 42 | AD7 | O | KMO3 | |
| 43 | $\overline{\text{EC}}$ | I | | Not used. |
| 44 | SCLK | O | SCLK0 | Serial communication clock. |
| 45 | SO | O | S IN0 | Serial data output. |
| 46 | SI | I | S OUT 0 | Serial data input. |
| 47 | PA0 | O | $\overline{\text{COSMO CS}}$ | SS microcomputer chip select signal. |
| 48 | PA1 | O | OSD BUSY | OSD control signal. |
| 49 | PA2 | O | $\overline{\text{COSMO RST}}$ | SS microcomputer reset signal output. |
| 50 | PA3 | O | POWER ON | Power control for SW system. "H" output when power on. |
| 51 | PF0 | O | MEM CS | Tuner memory chip select signal. |
| 52 | PF1 | O | | Not used. |
| 53 | PF2 | O | | |
| 54 | PF3 | O | OSD STROBE | OSD control signal. |
| 55 | PE0 | O | MEM DATA | Tuner memory data. |
| 56 | PE1 | I | | Not used. |
| 57 | PE2 | I | | |
| 58 | PE3 | I | | |
| 59 | PY0 | I/O | | |
| 60 | PWM | O | PWM | Tuner control. |
| 61 | WP | I | $\overline{\text{POWER FAIL}}$ | "L" when service interruption (service interruption detection). |
| 62 | RMC | I | $\overline{\text{SIRCS IN}}$ | Remote control input. |
| 63 | PD0 | I | KMI 0 | Key matrix input. |
| 64 | PD1 | I | KMI 1 | |
| 65 | PD2 | I | KMI 2 | |
| 66 | PD3 | I | KMI 3 | |
| 67 | PC0 | I | KMI 4 | |
| 68 | PC1 | I | KMI 5 | |
| 69 | PC2 | I | KMI 6 | |
| 70 | PC3 | I | KMI 7 | |
| 71 | Vss | | Vss | GND |
| 72 | XTAL | O | XTAL | System clock output. |
| 73 | N.C. | | | Not used. |
| 74 | EXTAL | I | EXTAL | System clock input. |
| 75 | VREF | | VREF | A/D input reference power. |
| 76 | VFDP | | VFDP | Power for fluorescent indicator. |
| 77 | PH0 | O | MEM SCLK | Memory control signal. |
| 78 | PH1 | O | | Not used. |
| 79 | PH2 | O | | |
| 80 | PH3 | O | | |

## 3-16. POWER BLOCK DIAGRAM


POWER SUPPLY
(See Page 95)
(See Page 99)
AC IN
F101
L101
LINE FILTER
D101
RECT
Q101,102
OSC & SWITCHING
T101
D201
+45V RECT
D202
OVER VOLTAGE DET
SCR201
PROTECT
D203
RECT
IC203
12V REG
IC202
12V REG
D204
RECT
IC204
Q202
5V REG
D205
RECT
R211
D206
RECT
R213
PC101
IC201
VOLTAGE ERROR DETECT
MTR 12V
SW 12V
UNSW 5.9V
SW 5V
+45V
-30V
DC 3.6V
DC 0V
POWER ON
MA-119 BOARD
(See Page 77)
CN801
IC401
LOADING MOTOR DRIVE
Q401
TAPEEND LED DRIVE
CN403
CN-C
DRUM MOTOR
S-REEL FG SENSOR
CN401
CAPSTAN MOTOR
TU701
UHF/VHF TUNER
VIF/SIF
D507
UN SW 5V
IC401
REEL FG AMP TAPE END DETECT
IC801
9V REG
SW 9V
CN404
T-REEL FG SENSOR
IC502
EEPROM
IC501
SERVO/ SYSTEM CONTROL
IC301
CHARACTER GENERATOR
IC302
SYNC SEP AFC
IC405
CTL AMP
IC901
AUDIO INPUT SELECT
RF701
RF MODULATOR
IC403
DRUM, CAPSTAN, ERROR INTEGRATOR
IC406
CAPSTAN FG AMP
IC407
DRUM PG AMP
IC951
VIDEO INPUT SELECT
IC201
AUDIO REC/PB AMP
(See Page 69)
CN102
CN002
SW 9V
IC002
CCD 1H DELAY
IC001
IC003, IC004
CN101
CN001
SW 5V
Y, CHROMA PROCESS
YC-120 BOARD
CN803
SW5V
SW9V
CN802
IC801
REC/PB AMP
Q811
RP-130 BOARD
(See Page 63)
IC001
TIMER/MODE CONTROL
VDD
VREF
RESET
VF DP
POWER FAIL
POWER ON
A/D KEY READ
IC002
RESET
VDD
OUT
VSS
S003
CL
D001
C003
BACK-UP
ND001
FLUORESCENT DISPLAY
D003
D002
IC003
POWER FALL DETECT
CN001
UNSW 5.9V
V FDP (-30V)
F(+)
F(-)
POWER ON
SW 5V
CN501
CN002
POWER LED
VDD
AD2
MF-154 BOARD (See Page 85)
CN051
IC051
REMOTE CONTOROL RECEIVER
S051
POWER
D051,052
POWER
MF-155 BOARD
(See Page 85)

# PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

## 4-1. FRAME SCHEMATIC DIAGRAM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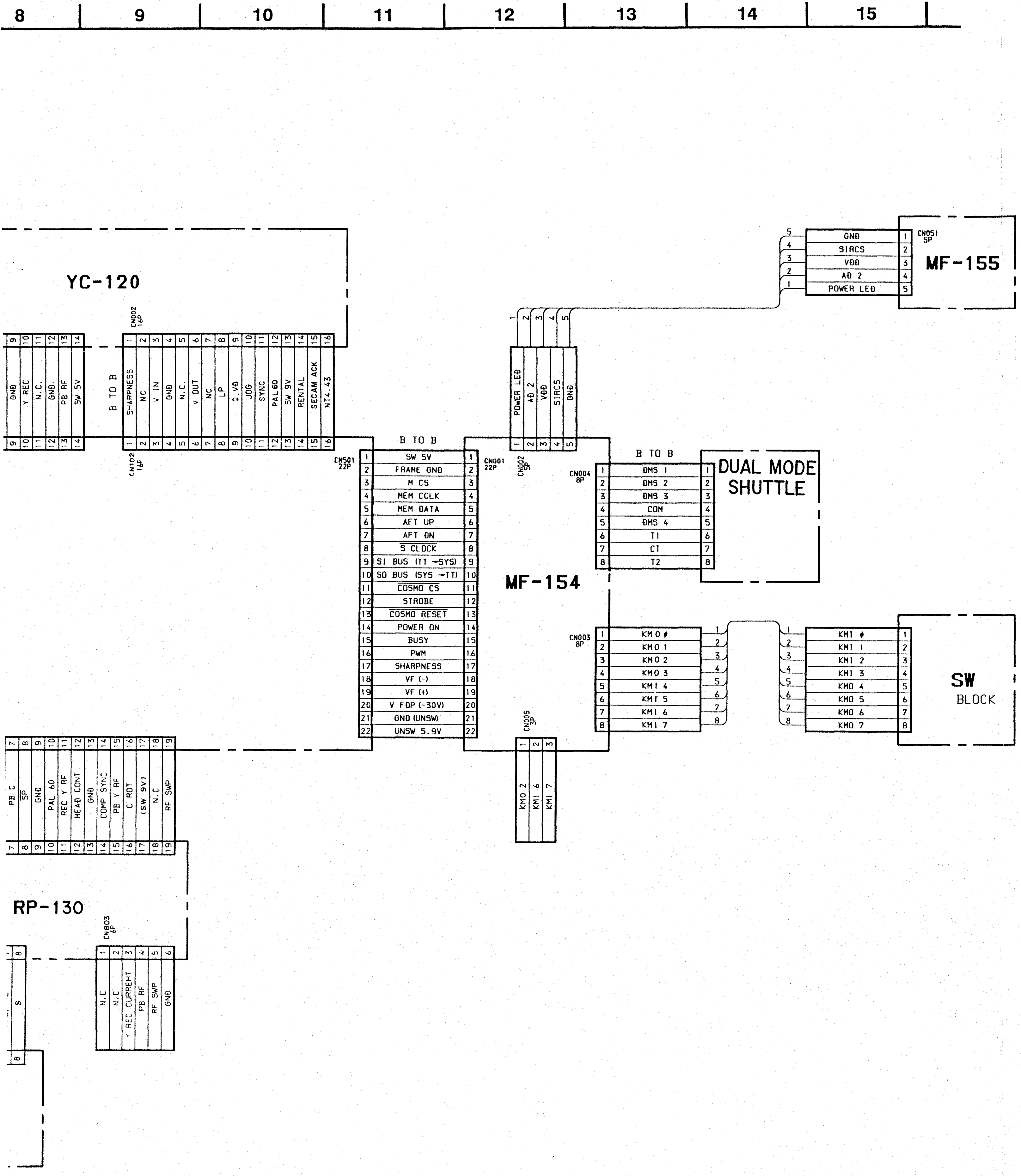
11
12
13
14
15
A
B
C
D
E
F
G
H
I
J
ACE HEAD
FE-67
AC-170
POWER SUPPLY
(POWER BLOCK)
YC-120
MA-119
MF-154
MF-1
DUAL MODE SHUTTLE
SW
BL
RP-130
MD
CN203 3P
BIAS (-)
N.C
BIAS (+)
CN202 3P
FULL ERASE (Y)
N.C
FULL ERASE (X)
CN201 4P
A HEAD (X)
A HEAD (Y)
A HEAD (G)
A ERASE HEAD
CN405 3P
CTL (X)
SW GND
CTL (Y)
B TO B
CN801 19P
N.C
MTR 12V
MTR 12V
GND (MTR)
GND (MTR)
SW 12V
N.C
UNSW 5.9V
SW 5V
GND (SW)
GND (SW)
GND (AU)
GND (UNSW)
GND (UNSW)
BC 45V
BC 0V
BC 3.6V
BC -30V
POWER ON
CN101 14P
CN001 14P
REC C
GND
PB C
GND
SWP
V SP
V PB
C ROT
GND
Y REC
N.C.
GND
PB RF
SW 5V
CN102 16P
CN002 16P
SHARPNESS
NC
V IN
GND
N.C.
V OUT
NC
LP
Q.VD
JOG
SYNC
PAL60
SW 9V
RENTAL
SECAM ACK
NT4.43
CN501 22P
CN001 22P
SW 5V
FRAME GND
M CS
MEM CCLK
MEM DATA
AFT UP
AFT DN
S CLOCK
SI BUS (TT →SYS)
SO BUS (SYS →TT)
COSMO CS
STROBE
COSMO RESET
POWER ON
BUSY
PWM
SHARPNESS
VF (-)
VF (+)
V FDP (-30V)
GND (UNSW)
UNSW 5.9V
CN002 5P
POWER LED
AD 2
VDD
SIRCS
GND
CN051 5P
GND
SIRCS
VDD
AD 2
POWER LED
CN004 8P
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
CN003 8P
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
KMI 0
KMI 1
KMI 2
KMI 3
KMO 4
KMO 5
KMO 6
KMO 7
CN005 3P
KMO 2
KMI 6
KMI 7
CN401 9P
GND (SW)
C.VS
LIMIT
SW 5V
MTR 12V
MTR GND
CAP RVS
FG
REF
CN402 4P
C OUT
C START
C-IN
GND (UNSW)
CN403 10P
S SENS
S REEL
REC SAF
GND (MTR)
MTR 12V
D.VS
D.FG
GND
D PG
N.C
CN404 13P
T.SENS
T.REEL
SW 5V
END LED
DEW
LOAD (-)
LOAD (+)
GND (UNSW)
MODE 1
MODE 2
GND (UNSW)
MODE 3
MODE 4
CN803 19P
SW 5V
REC
REC C
REC P
GND
JOG
PB C
SP
GND
PAL 60
REC Y RF
HEAD CONT
GND
COMP SYNC
PB Y RF
C ROT
(SW 9V)
N.C
RF SWP
CN802 19P
MD-55
MD-56
MD-57
MD-58
CN-B 9P
GND (SW)
C VS
LIMIT
SW 5V
MTR 12V
MTR GND
CAP RVS
FG
REF
CN-D 4P
C OUT
C START
C IN
GND (UNSW)
CN-C 10P
S SENS
S REEL
REC SAF
GND (MTR)
MTR 12V
D VS
D FG
GND
D PG
N.C
CN-A 13P
T SENS
T REEL
SW 5V
END LED
DEW
LOAD (-)
LOAD (+)
GND (UNSW)
MODE 1
MODE 2
GND (UNSW)
MODE 3
MODE 4
CN801 8P
CN-G 8P
EP-2 F
S
SP-1 F
S
EP-1 F
S
SP-2
S
CN803 6P
N.C
N.C
Y REC CURRENT
PB RF
RF SWP
GND
09

FRAME FRAME


8
9
10
11
12
13
14
15
YC-120
CN002 16P
B TO B
SHARPNESS
NC
V IN
GND
N.C.
V OUT
NC
LP
C.VD
JOG
SYNC
PAL 60
SW 9V
RENTAL
SECAM ACK
NT4.43
GND
Y REC
N.C.
GND
PB RF
SW 5V
CN102 16P
CN501 22P
B TO B
SW 5V
FRAME GND
M CS
MEM CCLK
MEM DATA
AFT UP
AFT DN
S CLOCK
SI BUS (TT →SYS)
SO BUS (SYS →TT)
COSMO CS
STROBE
COSMO RESET
POWER ON
BUSY
PWM
SHARPNESS
VF (-)
VF (+)
V FDP (-30V)
GND (UNSW)
UNSW 5.9V
CN001 22P
CN002 5P
POWER LED
AD 2
VDD
SIRCS
GND
MF-154
CN004 8P
B TO B
OMS 1
OMS 2
OMS 3
COM
OMS 4
T1
CT
T2
DUAL MODE SHUTTLE
GND
SIRCS
VDD
AD 2
POWER LED
CN051 5P
MF-155
CN003 8P
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
KMI 0
KMI 1
KMI 2
KMI 3
KMO 4
KMO 5
KMO 6
KMO 7
SW
BLOCK
CN005 3P
KMO 2
KMI 6
KMI 7
PB C
GND
PAL 60
REC Y RF
HEAD CONT
GND
COMP SYNC
PB Y RF
C ROT
(SW 9V)
N.C
RF SWP
RP-130
CN803 6P
N.C
N.C
Y REC CURRENT
PB RF
RF SWP
GND

### 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**
**(In addition to this , the necessary note is printed in each block.)**

- **For printed wiring boards.**
- ○— : indicated a lead wire mounted on the component side.
- —— : indicated a lead wire mounted on the conductor side.
- ■ : Parts mounted on the conductor side.
- ▨ : Pattern from the side which enables seeing.
- Circled numbers refer to waveforms.

- **For schematic diagrams.**
- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minuts side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, 1/4W unless otherwise noted.
  Chip resistor are 1/10W unless otherwise noted.
  kΩ : 1000Ω , MΩ : 1000kΩ .
- All capacitors are in μF unless otherwise noted. pF: μμF.
  50V or less are not indicated except for electrolytics and tantalums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⊠ : nonflammable resistor.
- ∿ : fusible resistor.
- ▭ : panel designation.*
- △ : internal component.*
- ▭ : adjustment for repeair.*
- ▬ : B+ Line.*
- - - - : B– Line.*
- ⇨ : IN/OUT direction of (+, – ) B LINE.*
- Circled numbers refer to waveforms.*
- Voltages are dc between ground and measurement points.*
- Readings are taken with a color-bar signal input.*
- Readings are taken with a digital multimeter (DC10MΩ ).*
- Voltages are taken with a VOM (Input impedance 10MΩ ).*
- Voltage variations may be noted due to normal production tolerances.*

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty.
Replace only with part number specified.

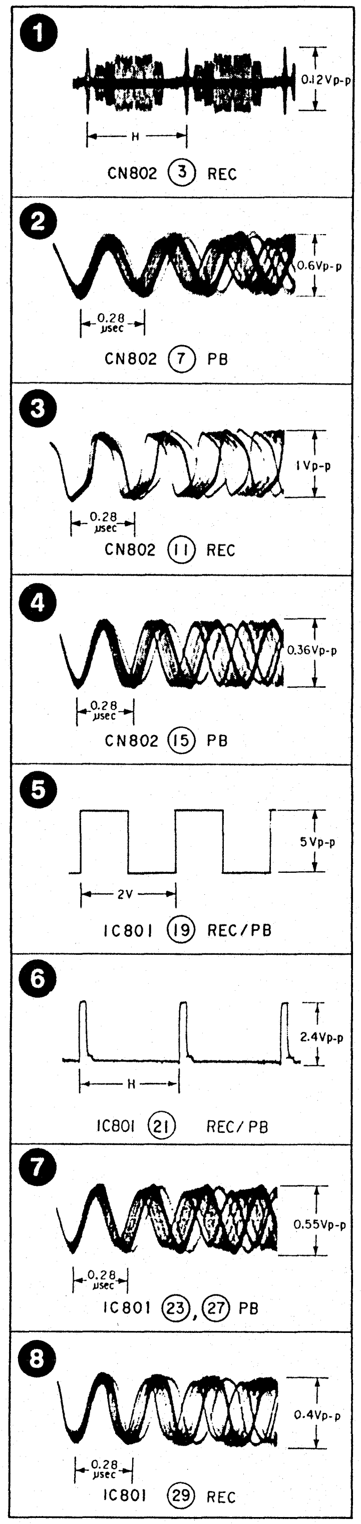
When indicating parts by reference number, please include the board name.

* indicated by the color red.

## RP-130 (REC/PB AMP) PRINTED WIRING BOARD

— Ref. No. RP-130 BOARD: 1000 series —

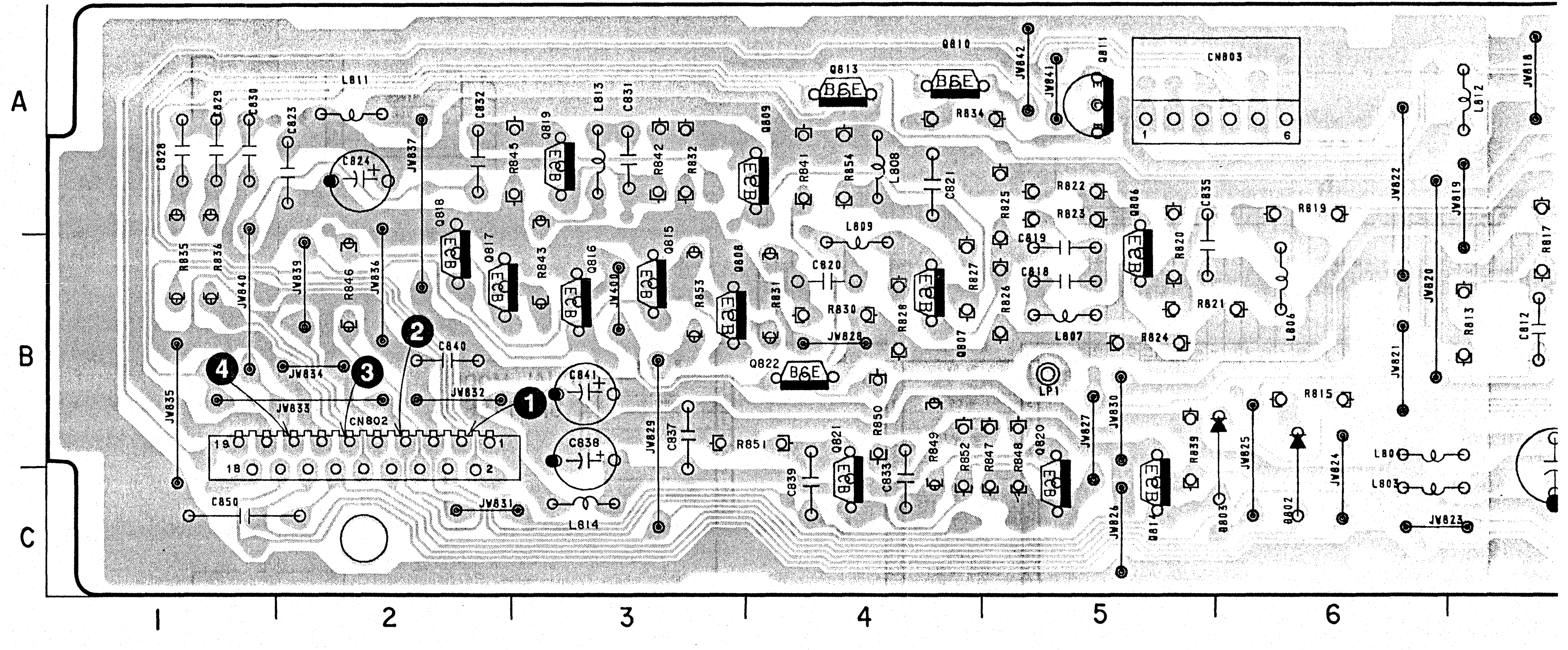
**RP-130 BOARD**



RP-130 BOARD

| | |
|---|---|
| CN801 | B-8 |
| CN802 | B-2 |
| CN803 | A-5 |
| D801 | C-7 |
| D802 | C-6 |
| D803 | B-6 |
| D805 | A-9 |
| D806 | C-9 |
| D807 | A-9 |
| D808 | C-9 |
| IC801 | B-8 |
| Q801 | A-9 |
| Q802 | C-8 |
| Q803 | C-8 |
| Q804 | B-7 |
| Q805 | A-7 |
| Q806 | B-5 |
| Q807 | B-4 |
| Q808 | B-3 |
| Q809 | A-3 |
| Q810 | A-4 |
| Q811 | A-5 |
| Q813 | A-4 |
| Q814 | C-5 |

**RP-130 BOARD**


A
B
C
1
2
3
4
5
6
CN803
CN802
Q810
Q813
Q811
B6E
E3B
L811
L813
L814
L809
L807
C824
C838
C841
C840
C850
JW833
JW834
JW831
JW832
LP1
❶
❷
❸
❹

( DIODE )

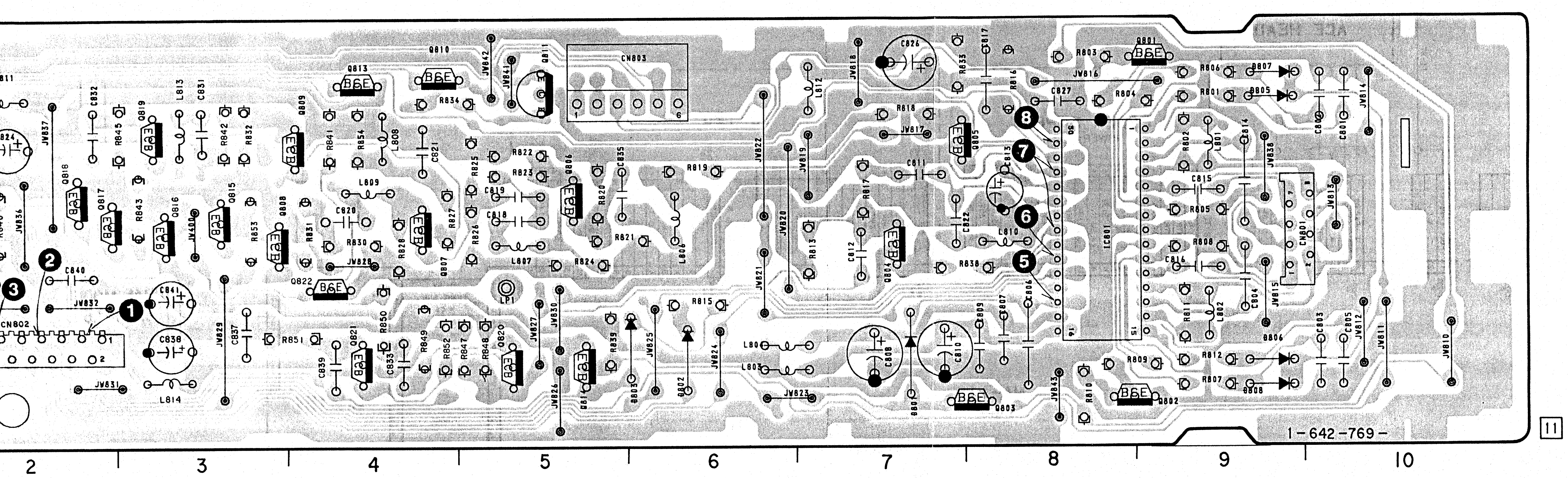
| | | | |
|---|---|---|---|
| D801 | 8-719-911-19 | DIODE | 1SS119 |
| D802 | 8-719-911-19 | DIODE | 1SS119 |
| D803 | 8-719-911-19 | DIODE | 1SS119 |
| D805 | 8-719-911-19 | DIODE | 1SS119 |
| D806 | 8-719-911-19 | DIODE | 1SS119 |
| D807 | 8-719-911-19 | DIODE | 1SS119 |
| D808 | 8-719-911-19 | DIODE | 1SS119 |

( IC )

| | | | |
|---|---|---|---|
| IC801 | 8-759-046-75 | IC | HA118162NT |

( TRANSISTOR )

| | | | |
|---|---|---|---|
| Q801 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q802 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q803 | 8-729-900-65 | TRANSISTOR | DTA144ES |
| Q804 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q805 | 8-729-423-42 | TRANSISTOR | 2SA1309A-R |
| Q806 | 8-729-423-42 | TRANSISTOR | 2SA1309A-R |
| Q807 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q808 | 8-729-900-89 | TRANSISTOR | DTC144ES |
| Q809 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q810 | 8-729-900-89 | TRANSISTOR | DTC144ES |
| Q811 | 8-729-173-38 | TRANSISTOR | 2SA733-K |
| Q813 | 8-729-900-65 | TRANSISTOR | DTA144ES |
| Q814 | 8-729-900-89 | TRANSISTOR | DTC144ES |


Q801
Q802
Q803
Q804
Q805
Q806
Q807
Q808
Q809
Q810
Q811
Q813
Q815
Q816
Q817
Q818
Q819
Q820
Q821
Q822
IC801
CN801
CN802
CN803
C826
C808
C810
C841
C838
LP1
1-642-769-
11
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4
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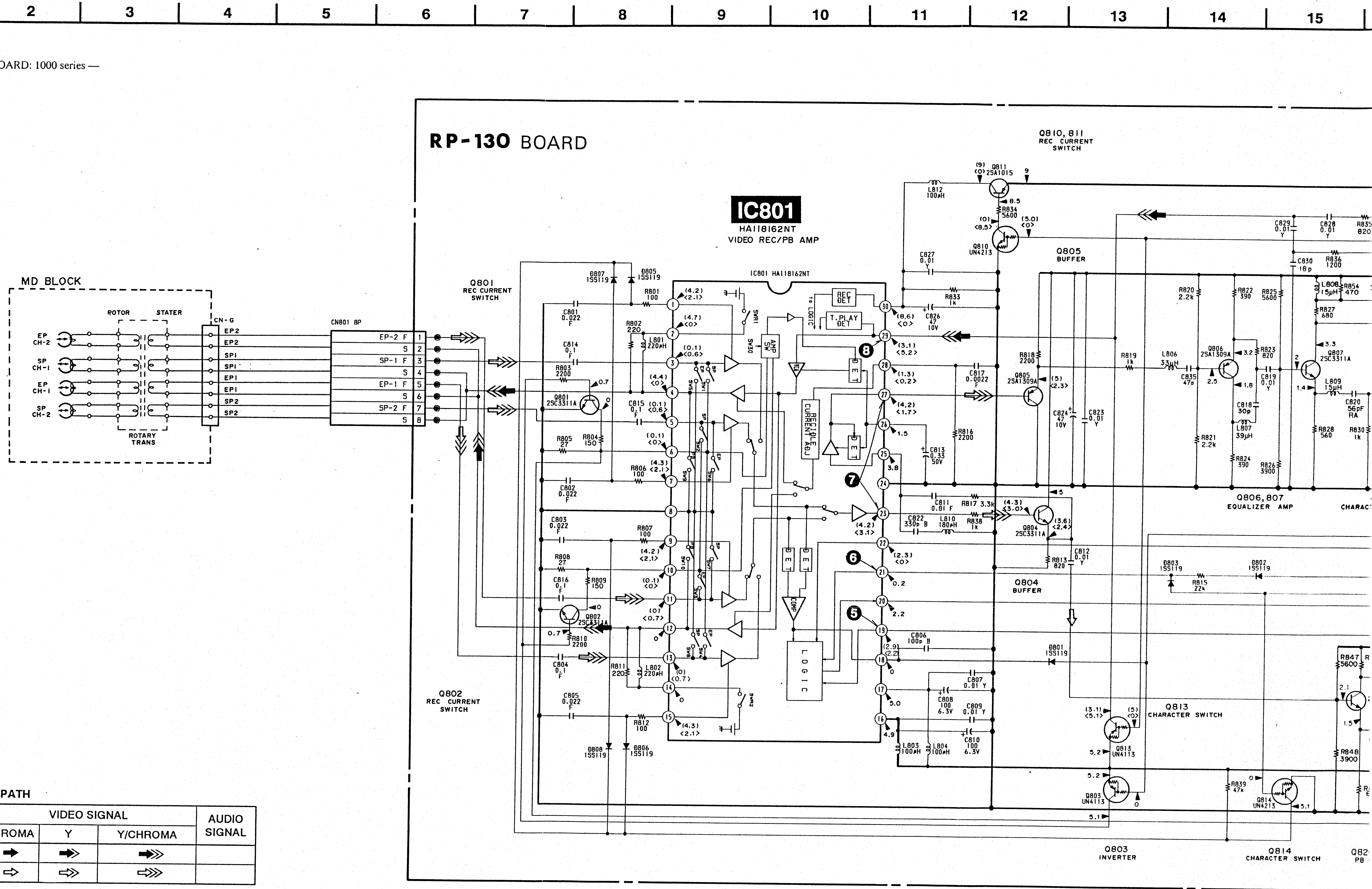
9
10

〈 TRANSISTOR 〉

| | | | |
|---|---|---|---|
| Q801 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q802 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q803 | 8-729-900-65 | TRANSISTOR | DTA144ES |
| Q804 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q805 | 8-729-423-42 | TRANSISTOR | 2SA1309A-R |
| Q806 | 8-729-423-42 | TRANSISTOR | 2SA1309A-R |
| Q807 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q808 | 8-729-900-89 | TRANSISTOR | DTC144ES |
| Q809 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q810 | 8-729-900-89 | TRANSISTOR | DTC144ES |
| Q811 | 8-729-173-38 | TRANSISTOR | 2SA733-K |
| Q813 | 8-729-900-65 | TRANSISTOR | DTA144ES |
| Q814 | 8-729-900-89 | TRANSISTOR | DTC144ES |

## RP-130 (REC/PB AMP) SCHEMATIC DIAGRAM

— Ref. No. RP-130 BOARD: 1000 series —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14
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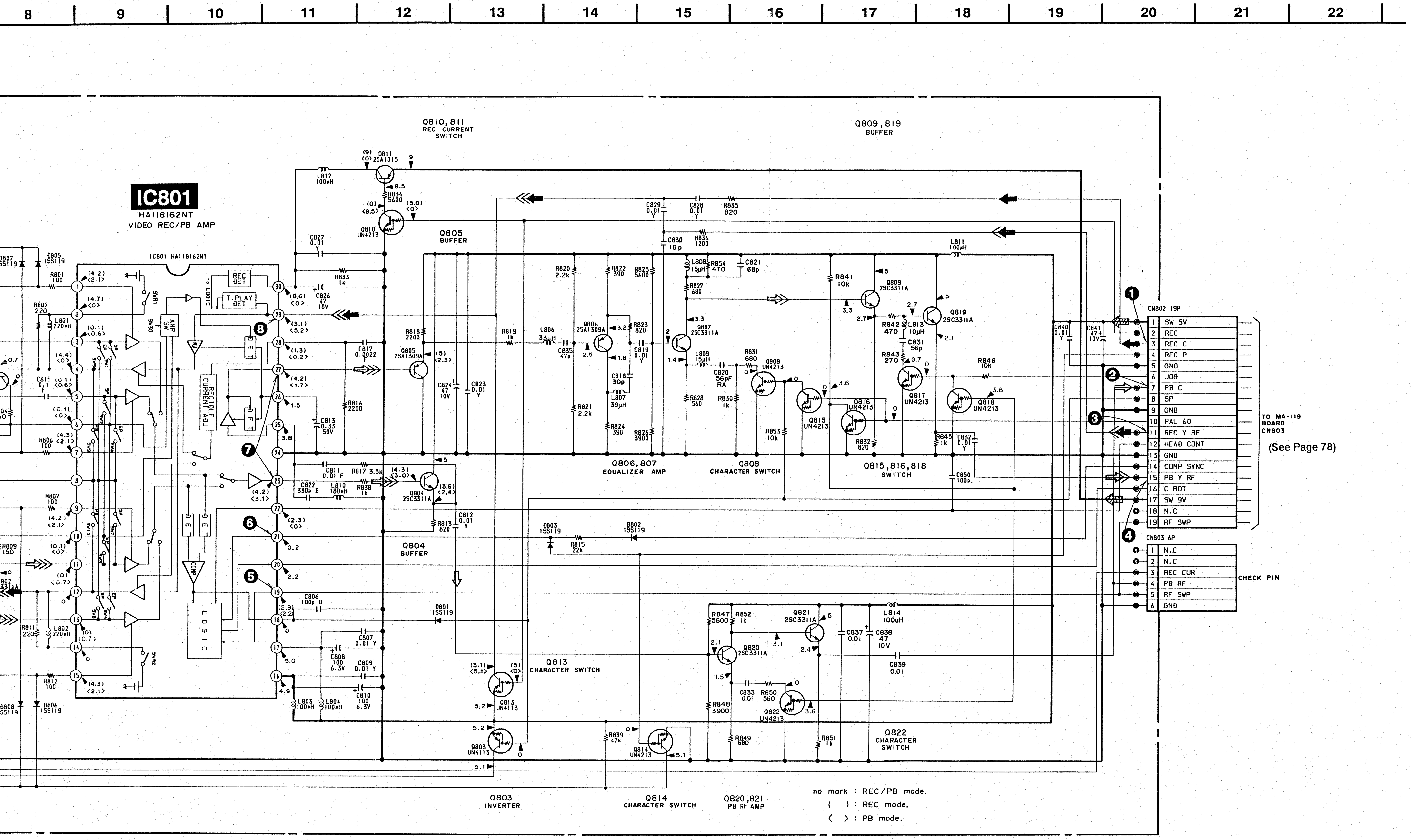
A
B
C
D
E
F
G
H
I
J
MD BLOCK
ROTOR
STATER
EP CH-2
SP CH-1
EP CH-1
SP CH-2
ROTARY TRANS
CN-G
EP2
EP2
SP1
SP1
EP1
EP1
SP2
SP2
CN801 8P
EP-2 F
S
SP-1 F
S
EP-1 F
S
SP-2 F
S
RP-130 BOARD
IC801
HA118162NT
VIDEO REC/PB AMP
IC801 HA118162NT
REC DET
T.PLAY DET
AMP SW
REC/PLE CURRENT ADJ
COMP
LOGIC
DET
Q801
REC CURRENT SWITCH
Q801 2SC3311A
Q802 2SC3311A
Q802
REC CURRENT SWITCH
Q803
INVERTER
Q804
BUFFER
Q804 2SC3311A
Q805
BUFFER
Q805 2SA1309A
Q806, 807
EQUALIZER AMP
Q806 2SA1309A
Q807 2SC3311A
Q810, 811
REC CURRENT SWITCH
Q811 2SA1015
Q810 UN4213
Q813
CHARACTER SWITCH
Q813 UN4113
Q803 UN4113
Q814
CHARACTER SWITCH
Q814 UN4213
D801 1SS119
D802 1SS119
D803 1SS119
D805 1SS119
D806 1SS119
D807 1SS119
D808 1SS119
R801 100
R802 220
R803 2200
R804 150
R805 27
R806 100
R807 100
R808 27
R809 150
R810 2200
R811 220
R812 100
R813 820
R815 22k
R816 2200
R817 3.3k
R818 2200
R819 1k
R820 2.2k
R821 2.2k
R822 390
R823 820
R824 390
R825 5600
R826 3900
R827 680
R828 560
R830 1k
R833 1k
R834 5600
R835 820
R836 1200
R838 1k
R839 47k
R847 5600
R848 3900
R854 470
C801 0.022 F
C802 0.022
C803 0.022 F
C804 0.1 F
C805 0.022
C806 100p B
C807 0.01 Y
C808 100 6.3V
C809 0.01 Y
C810 100 6.3V
C811 0.01 F
C812 0.01 Y
C813 0.33 50V
C814 0.1 F
C815 0.1 F
C816 0.1 F
C817 0.0022 F
C818 30p
C819 0.01 Y
C820 56pF RA
C822 330p B
C823 0.01 Y
C824 47 10V
C826 47 10V
C827 0.01 Y
C828 0.01 Y
C829 0.01 Y
C830 16p
C835 47p
L801 220μH
L802 220μH
L803 100μH
L804 100μH
L806 33μH
L807 39μH
L808 15μH
L809 15μH
L810 180μH
L812 100μH
SWR1
SWR2
SW30
❺
❻
❼
❽

- SIGNAL PATH

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡➡ | ➡➡➡ | |
| PB | ⇨ | ⇨⇨ | ⇨⇨⇨ | |


8
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18
19
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21
22
IC801
HA118162NT
VIDEO REC/PB AMP
IC801 HA118162NT
Q810,811
REC CURRENT
SWITCH
Q809,819
BUFFER
Q805
BUFFER
Q804
BUFFER
Q806,807
EQUALIZER AMP
Q808
CHARACTER SWITCH
Q815,816,818
SWITCH
Q813
CHARACTER SWITCH
Q822
CHARACTER
SWITCH
Q803
INVERTER
Q814
CHARACTER SWITCH
Q820,821
PB RF AMP
REC DET
T.PLAY DET
AMP SW
RECIPLE CURRENT ADJ
COMP
LOGIC
CN802 19P
1 SW 5V
2 REC
3 REC C
4 REC P
5 GND
6 JOG
7 PB C
8 SP
9 GND
10 PAL 60
11 REC Y RF
12 HEAD CONT
13 GND
14 COMP SYNC
15 PB Y RF
16 C ROT
17 SW 9V
18 N.C
19 RF SWP
TO MA-119
BOARD
CN803
(See Page 78)
CN803 6P
1 N.C
2 N.C
3 REC CUR
4 PB RF
5 RF SWP
6 GND
CHECK PIN

no mark : REC/PB mode.
( ) : REC mode.
〈 〉 : PB mode.

## YC-120 (Y/CHROMA PROCESS) PRINTED WIRING BOARD

— Ref. No. YC-120 BOARD: 2000 series —

〈 DIODE 〉

| | | | |
|---|---|---|---|
| D001 | 8-719-911-19 | DIODE | 1SS119 |
| D002 | 8-719-911-19 | DIODE | 1SS119 |
| D003 | 8-719-911-19 | DIODE | 1SS119 |
| D004 | 8-719-911-19 | DIODE | 1SS119 |
| D006 | 8-719-911-19 | DIODE | 1SS119 |
| D007 | 8-719-911-19 | DIODE | 1SS119 |
| D008 | 8-719-911-19 | DIODE | 1SS119 |
| D010 | 8-719-911-19 | DIODE | 1SS119 |

〈 IC 〉

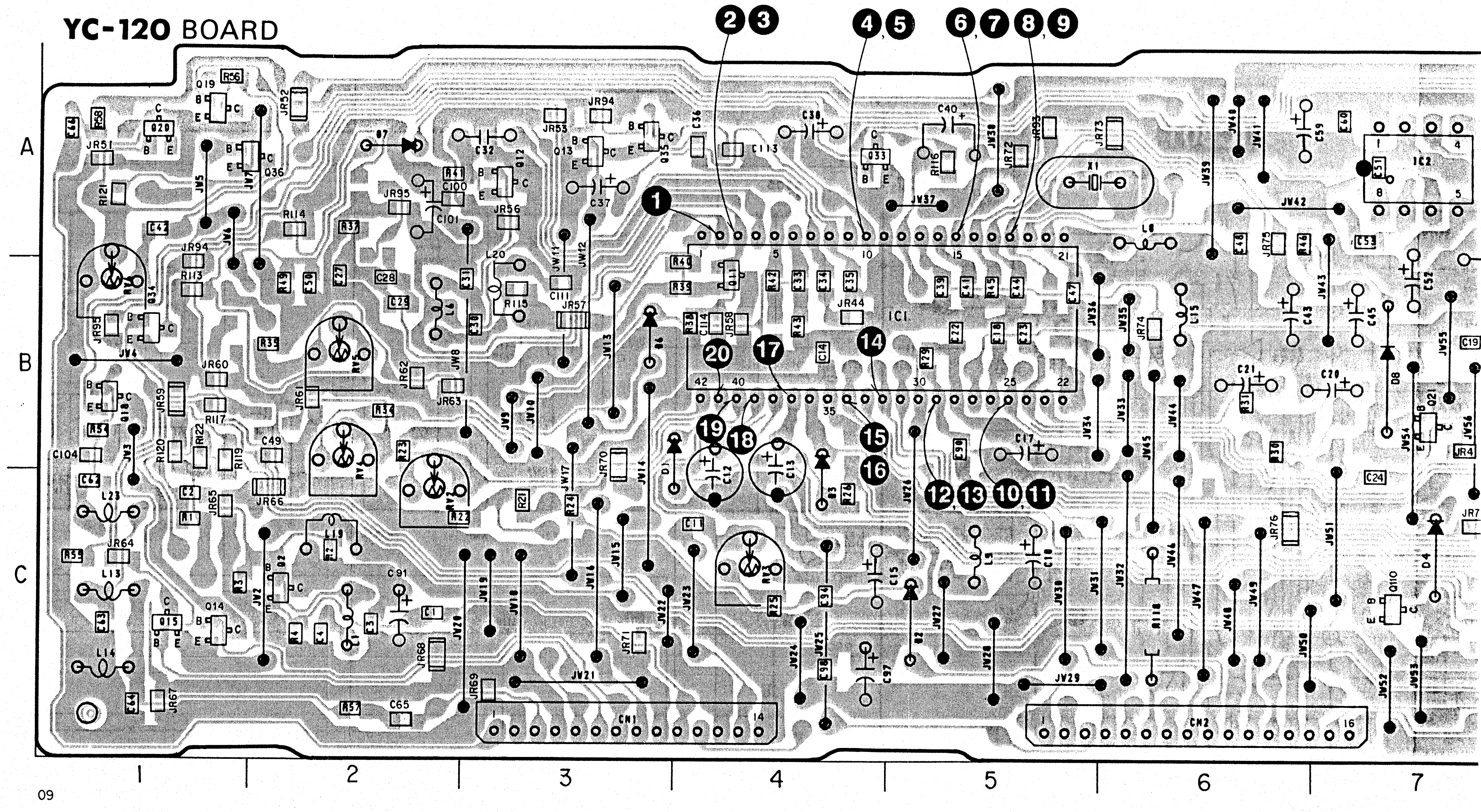
| | | | |
|---|---|---|---|
| IC001 | 8-759-046-76 | IC | LA7396 |
| IC002 | 8-759-821-51 | IC | LC8992 |
| IC003 | 8-759-637-11 | IC | M52063SP |
| IC004 | 8-759-996-63 | IC | BA7025L |

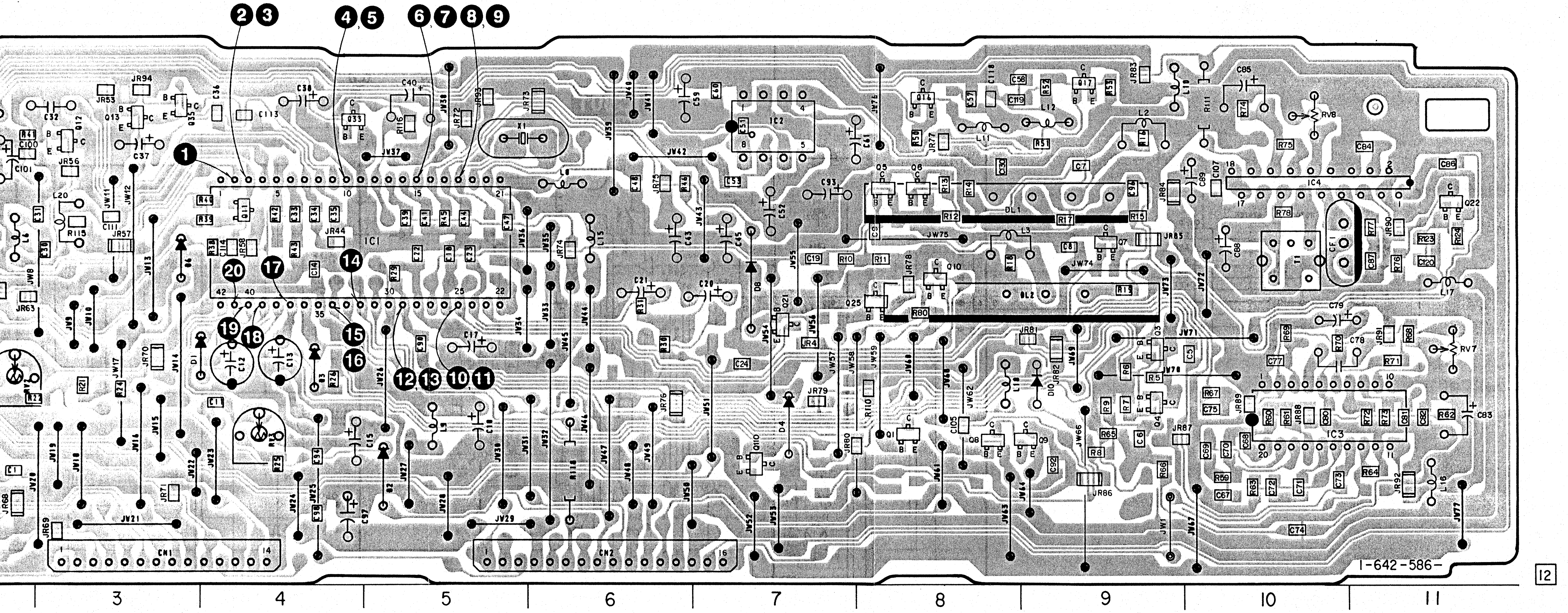
〈 TRANSISTOR 〉

| | | | |
|---|---|---|---|
| Q001 | 8-729-424-18 | TRANSISTOR | UN2113 |
| Q002 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q003 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q004 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q005 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q006 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q007 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q008 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q009 | 8-729-424-18 | TRANSISTOR | UN2113 |
| Q010 | 8-729-424-18 | TRANSISTOR | UN2113 |
| Q011 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q012 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q013 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q014 | 8-729-424-56 | TRANSISTOR | UN211L |
| Q015 | 8-729-424-18 | TRANSISTOR | UN2113 |
| Q016 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q017 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q018 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q019 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q020 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q021 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q022 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q025 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q033 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q034 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q035 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q036 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q110 | 8-729-421-22 | TRANSISTOR | UN2211 |

YC-120 BOARD

| | |
|---|---|
| D001 | B-3 |
| D002 | C-5 |
| D003 | C-4 |
| D006 | B-3 |
| D007 | A-2 |
| D008 | B-7 |
| IC001 | B-5 |
| IC002 | A-7 |
| Q002 | C-2 |
| Q011 | B-4 |
| Q012 | A-3 |
| Q013 | A-3 |
| Q014 | C-1 |
| Q015 | C-1 |
| Q016 | A-8 |
| Q017 | A-9 |
| Q018 | B-1 |
| Q020 | A-1 |
| Q026 | A-2 |
| Q033 | A-4 |
| Q034 | B-1 |
| Q035 | A-3 |


YC-120 BOARD
②③
④,⑤
⑥,⑦,⑧,⑨
①
⑳ ⑰ ⑭
⑲ ⑱
⑮ ⑯
⑫,⑬,⑩,⑪
A
B
C
1
2
3
4
5
6
7
09
IC1
IC2
X1
CN1
CN2
Q19
Q20
Q36
Q13
Q12
Q35
Q33
Q34
Q18
Q14
Q15
Q11
Q21
Q110
RV1
RV2
RV3
RV4
RV5
D1
D2
D3
D4
D6
D7
D8
C12
C13
C15
C17
C18
C20
C21
C37
C38
C40
C91
C97
L6
L8
L9
L13
L14
L15
L19
L20
L23
JW21
JW29
JW42
JR57
JR64
JR66


❶
❷❸
❹,❺
❻,❼❽,❾
❿,⓫
⓬,⓭
⓮
⓯
⓰
⓱
⓲
⓳
⓴
IC1
IC2
IC3
IC4
CN1
CN2
DL1
DL2
X1
CF1
T1
RV7
RV8
1-642-586-
12
3
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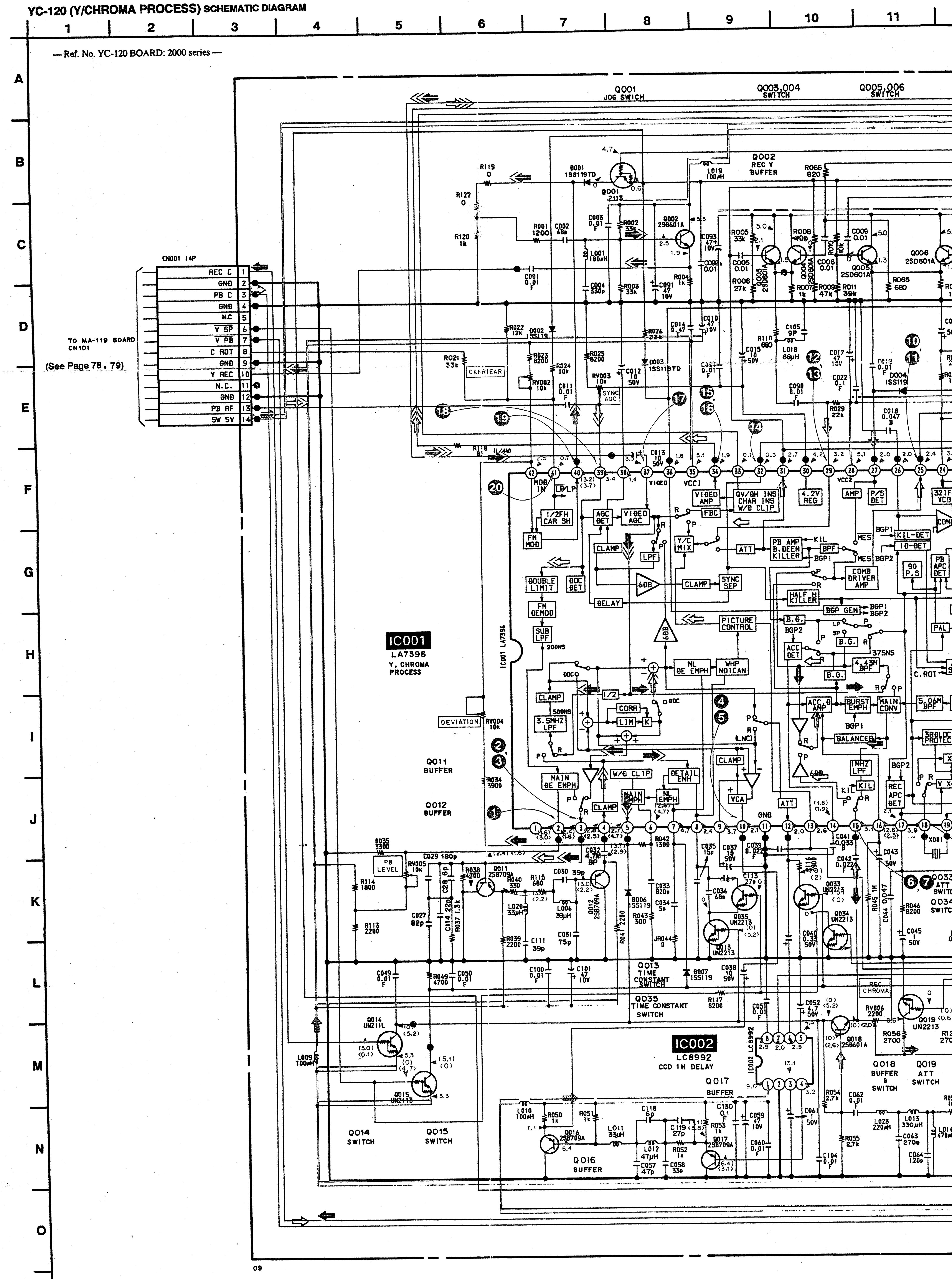
11

## YC-120 (Y/CHROMA PROCESS) SCHEMATIC DIAGRAM

— Ref. No. YC-120 BOARD: 2000 series —



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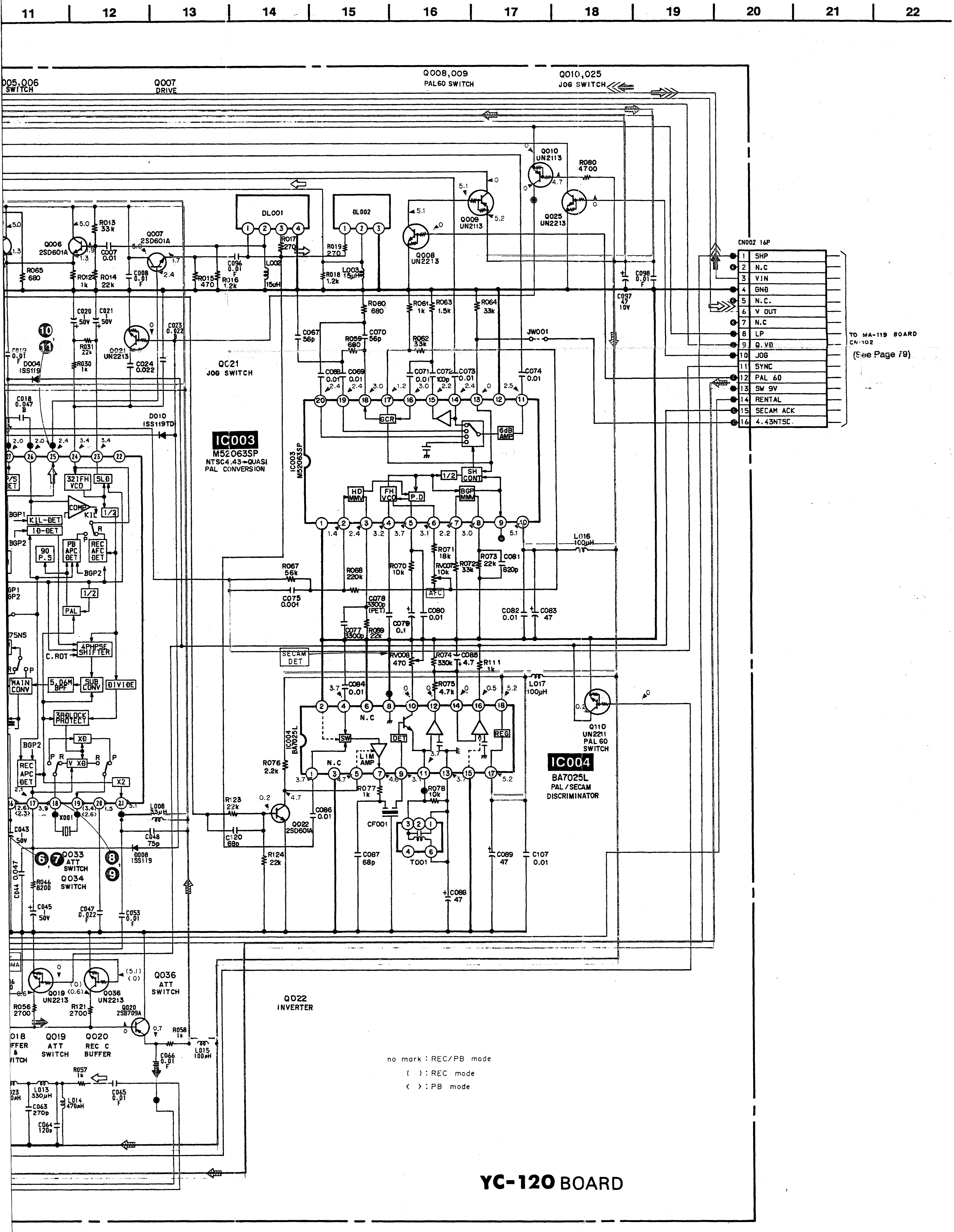
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
CN001 14P
REC C
GND
PB C
GND
N.C
V SP
V PB
C ROT
GND
Y REC
N.C.
GND
PB RF
SW 5V
TO MA-119 BOARD CN101
(See Page 78, 79)
Q001 JOG SWITCH
Q003,004 SWITCH
Q005,006 SWITCH
Q002 REC Y BUFFER
R119 0
R122 0
R120 1k
D001 1SS119TD
L019 100μH
R066 820
R001 1200
C002 68p
C003 0.01
R002 33k
Q002 2SB601A
C093 47 10V
R005 33k
R008
C009 0.01
Q006 2SD601A
L001 180μH
C092 0.01
C005 0.01
C006 0.01
Q005 2SD601A
C001 0.01
C004 330p
R003 33k
C091 47 10V
R004 1k
R006 27k
R007 1k
R009 47k
R011 39k
R065 680
R022 12k
D002 1SS119
R026 22k
C014 0.47
C010 47 10V
R110 680
C105 9P
L018 68μH
R021 33k
R023 8200
R024 10k
R025 8200
C012 10 50V
D003 1SS119TD
C015 10 50V
C017 47 10V
C019 0.01
D004 1SS119
CARRIER
RV002 10k
C011 0.01
RV003 10k
SYNC AGC
C031 0.01
C090 0.01
C022 0.1
R029 22k
C018 0.047
R118 82 (1/4W)
C013 10 50V
MOD IN
LP/LP
VIDEO
VCC1
VCC2
VIDEO AMP
QV/QH INS CHAR INS W/D CLIP
4.2V REG
AMP
P/S DET
321F VCO
COMP
1/2FH CAR SH
AGC DET
VIDEO AGC
FBC
FM MOD
CLAMP
LPF
Y/C MIX
ATT
PB AMP B.DEEM KILLER
BPF
MES
KIL-DET
ID-DET
BGP1
BGP2
COMB DRIVER AMP
90 P.S
PB APC DET
DOUBLE LIMIT
DOC DET
6DB
SYNC SEP
DELAY
HALF H KILLER
BGP GEN
FM DEMOD
B.G.
PICTURE CONTROL
PAL
SUB LPF
200NS
375NS
ACC DET
4.43M BPF
IC001 LA7396 Y, CHROMA PROCESS
NL DE EMPH
WHP NDICAN
C.ROT
1/2
CORR
LIM
K
DOC
500NS
3.5MHZ LPF
ACC & AMP
BURST EMPH
MAIN CONV
5.06M BPF
BALANCER
3ROLOC PROTEC
DEVIATION
RV004 10k
Q011 BUFFER
Q012 BUFFER
R034 3900
MAIN DE EMPH
W/D CLIP
DETAIL ENH
MAIN EMPH
NL EMPH
VCA
1MHZ LPF
KIL
REC APC DET
GND
R035 3300
PB LEVEL
RV005 10k
C029 180p
R114 1800
R113 2200
C027 82p
C28 8p
C114 220
R037 1.3k
R038 4700
Q011 2SB709A
R040 330
R115 680
C030 39p
C032 4.7M BP
L020 33μH
L006 39μH
Q012 2SB709A
R042 1300
D006 1SS119
C033 820p
C034 5p
R043 300
JR044 0
C035 15p
C036 68p
C037 10 50V
C039 0.022
C113 27p
Q035 UN2213
Q013 UN2213
R116 3900
Q033 UN2213
Q034 UN2213
C041 0.033
C042 0.022
R045 1k
C044 0.047
C043 10 50V
R046 8200
C045 1 50V
X001
Q033 ATT SWITCH
Q034 SWITCH
R039 2200
C111 39p
C031 75p
R041 2200
C040 0.33 50V
C049 0.01
R049 4700
C050 0.01
C100 0.01
C101 47 10V
Q013 TIME CONSTANT SWITCH
D007 1SS119
C038 10 50V
Q035 TIME CONSTANT SWITCH
R117 8200
C051 0.01
C052 4.7 50V
REC CHROMA
RV006 2200
Q019 UN2213
Q014 UN2111
Q015 UN2113
L009 100μH
IC002 LC8992 CCD 1H DELAY
Q018 2SD601A
R056 2700
Q018 BUFFER & SWITCH
Q019 ATT SWITCH
Q017 BUFFER
R054 2.7k
C062 0.01
L023 220μH
L013 330μH
C063 270p
C064 120p
L010 100μH
R050 1k
R051 1k
Q016 2SB709A
L011 33μH
C118 6p
C119 27p
R053 1k
C130 0.1
C059 47 10V
C061 50V
Q017 2SB709A
L012 47μH
R052 1k
C057 47p
C058 33p
C060 0.01
C104 0.01
R055 2.7k
Q016 BUFFER
Q014 SWITCH
Q015 SWITCH
09


11
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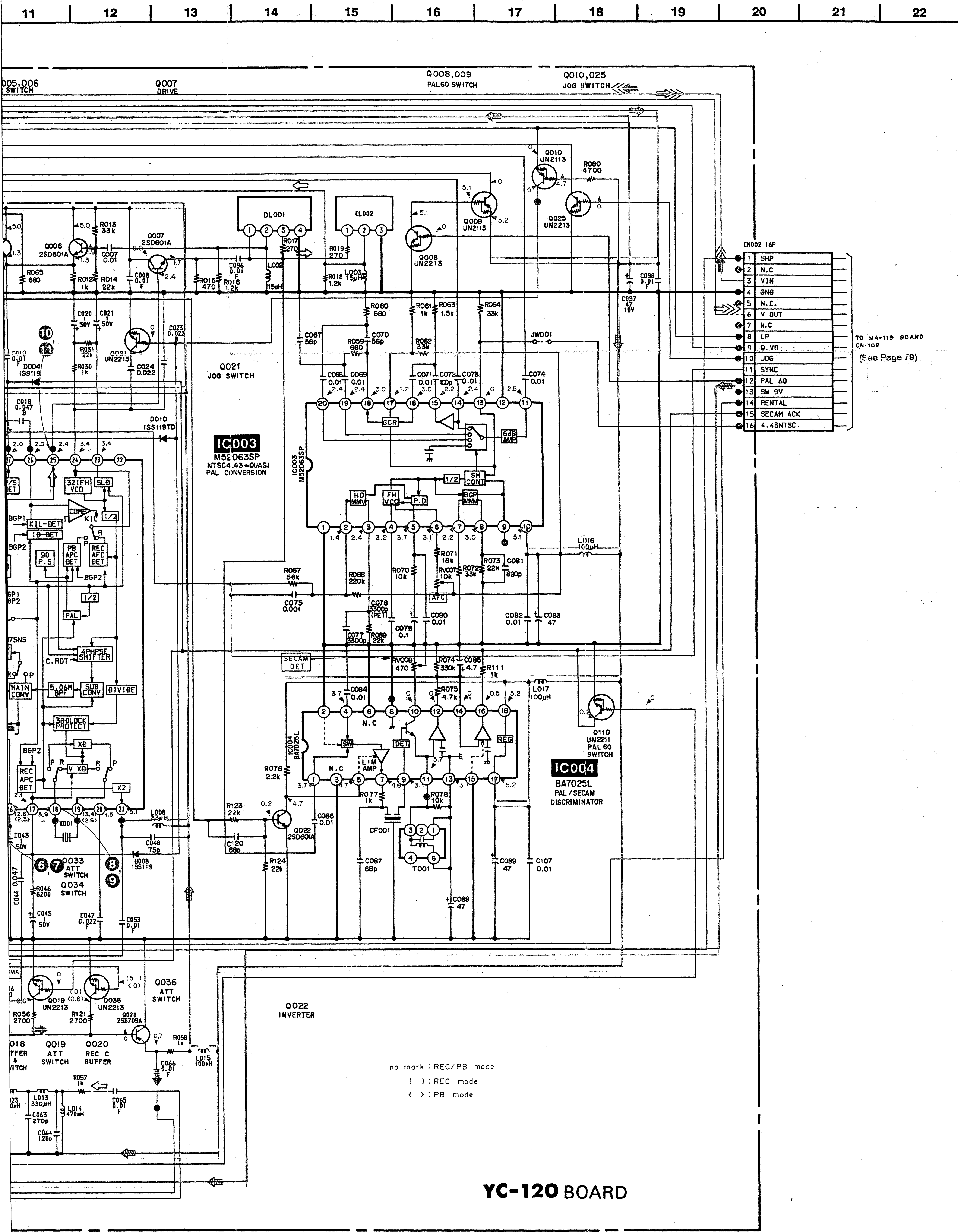
20
21
22
Q005,006 SWITCH
Q007 DRIVE
Q008,009 PAL60 SWITCH
Q010,025 JOG SWITCH
Q010 UN2113
R080 4700
Q009 UN2113
Q025 UN2213
Q008 UN2213
DL001
DL002
Q006 2SD601A
Q007 2SD601A
R013 33k
C007 0.01
R065 680
R012 1k
R014 22k
C008 0.01 F
R015 470
R016 1.2k
C096 0.01 F
L002 15μH
R017 270
R019 270
R018 1.2k
L003 15μH
R060 680
R061 1k
R063 1.5k
R064 33k
C020 1 50V
C021 1 50V
R031 22k
R030 1k
Q021 UN2213
C023 0.022 B
C024 0.022
C019 0.01 F
D004 1SS119
C018 0.047 B
D010 1SS119TD
QC21 JOG SWITCH
C067 56p
C070 56p
R059 680
R062 33k
C068 0.01
C069 0.01
C071 0.01
C072 100p
C073 0.01
C074 0.01
JW001
IC003
M52063SP
NTSC4.43→QUASI PAL CONVERSION
IC003 M52063SP
GCR
6dB AMP
1/2
SH CONT
HD MMV
FH VCO
P.D
BGP MMV
R067 56k
C075 0.001
R068 220k
C078 3300p (PET)
C077 3300p
R069 22k
C079 0.1
R070 10k
R071 18k
RV007 10k
R072 33k
AFC
R073 22k
C081 820p
C080 0.01
C082 0.01
C083 47
L016 100μH
CN002 16P
1 SHP
2 N.C
3 VIN
4 GND
5 N.C.
6 V OUT
7 N.C
8 LP
9 Q.VD
10 JOG
11 SYNC
12 PAL 60
13 SW 9V
14 RENTAL
15 SECAM ACK
16 4.43NTSC
C097 47 10V
C098 0.01 F
TO MA-119 BOARD CN-102
(See Page 79)
321FH VCO
SLD
COMP
KIL
KIL-DET
ID-DET
BGP1
BGP2
90 P.S
PB APC DET
REC AFC DET
PAL
4PHPSE SHIFTER
C.ROT
MAIN CONV
5.06M BPF
SUB CONV
DIVIDE
3RBLOCK PROTECT
X0
V X0
X2
REC APC DET
X001
L008 33μH
C048 75p
D008 1SS119
C043 1 50V
Q033 ATT SWITCH
Q034 SWITCH
C044 0.047
R046 8200
C045 1 50V
C047 0.022 F
C053 0.01 F
SECAM DET
RV008 470
R074 330k
C085 4.7
R111 1k
L017 100μH
C084 0.01
R075 4.7k
N.C
SW
DET
LIM AMP
REG
IC004 BA7025L
R076 2.2k
R077 1k
R078 10k
CF001
T001
C086 0.01
C087 68p
C088 47
C089 47
C107 0.01
Q110 UN2211 PAL 60 SWITCH
IC004
BA7025L
PAL/SECAM DISCRIMINATOR
R123 22k
C120 68p
Q022 2SD601A
R124 22k
Q019 UN2213
Q036 UN2213
Q036 ATT SWITCH
R056 2700
R121 2700
Q020 2SB709A
R058 1k
L015 100μH
C066 0.01 F
Q018 BUFFER & SWITCH
Q019 ATT SWITCH
Q020 REC C BUFFER
Q022 INVERTER
R057 1k
C065 0.01 F
L013 330μH
L014 470μH
C063 270p
C064 120p

no mark : REC/PB mode
( ) : REC mode
< > : PB mode

## YC-120 BOARD


11
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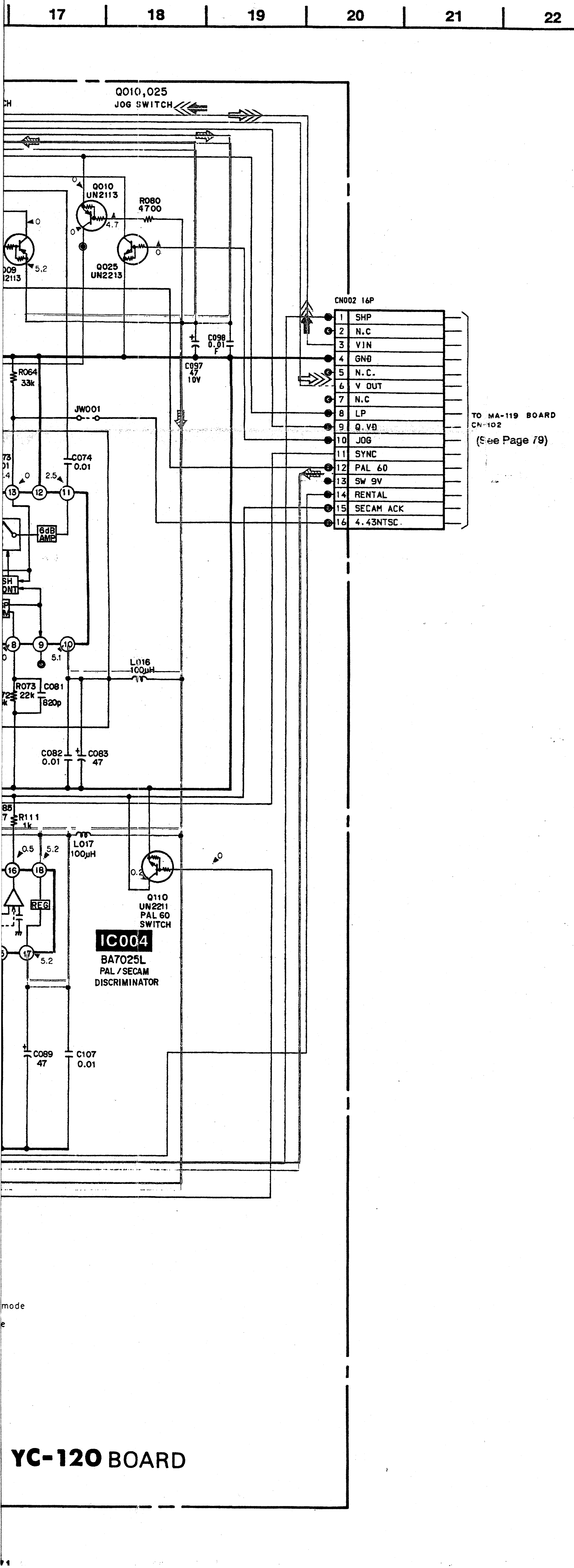
22
Q005,006 SWITCH
Q007 DRIVE
Q008,009 PAL60 SWITCH
Q010,025 JOG SWITCH
Q010 UN2113
R080 4700
Q009 UN2113
Q025 UN2213
Q008 UN2213
Q006 2SD601A
Q007 2SD601A
R013 33k
C007 0.01
R065 680
R012 1k
R014 22k
C008 0.01 F
DL001
DL002
R017 270
R019 270
R018 1.2k
L003 15μH
L002 15μH
C096 0.01 F
R015 470
R016 1.2k
C020 50V
C021 50V
R031 22k
R030 1k
Q021 UN2213
C023 0.022 B
C024 0.022
D004 1SS119
C018 0.047 B
D010 1SS119TD
Q021 JOG SWITCH
IC003
M52063SP
NTSC4.43→QUASI PAL CONVERSION
R060 680
R061 1k
R063 1.5k
R064 33k
C067 56p
R059 680
C070 56p
R062 33k
JW001
C068 0.01
C069 0.01
C071 0.01
C072 100p
C073 0.01
C074 0.01
GCR
6dB AMP
SH CONT
1/2
HD MMV
FH VCO
P.D
BGP MMV
321FH VCO
SLD
COMP
KIL
KIL-DET
ID-DET
PB APC DET
REC AFC DET
90 P.S
BGP1
BGP2
PAL
4PHPSE SHIFTER
C.ROT
MAIN CONV
5.06M BPF
SUB CONV
DIVIDE
3BBLOCK PROTECT
XD
V XD
X2
REC APC DET
X001
R067 56k
R068 220k
R070 10k
R071 18k
RV007 10k
R072 33k
R073 22k
C081 820p
AFC
C075 0.001
C078 3300p (PET)
C079 0.1
C080 0.01
C082 0.01
C083 47
C077 3300p
R069 22k
L016 100μH
SECAM DET
RV008 470
R074 330k
C085 4.7
R111 1k
C084 0.01
R075 4.7k
L017 100μH
IC004
BA7025L
PAL/SECAM DISCRIMINATOR
SW
DET
LIM AMP
REG
N.C
R076 2.2k
R077 1k
R078 10k
CF001
T001
C086 0.01
C087 68p
C088 47
C089 47
C107 0.01
Q110 UN2211 PAL 60 SWITCH
R123 22k
C120 68p
Q022 2SD601A
R124 22k
Q022 INVERTER
L008 33μH
C048 75p
D008 1SS119
Q033 ATT SWITCH
Q034 SWITCH
C043 50V
C044 0.047
R046 8200
C045 50V
C047 0.022 F
C053 0.01 F
Q019 UN2213
Q036 UN2213
Q036 ATT SWITCH
R056 2700
R121 2700
Q020 2SB709A
R058 1k
L015 100μH
C066 0.01 F
Q018 BUFFER & SWITCH
Q019 ATT SWITCH
Q020 REC C BUFFER
R057 1k
C065 0.01 F
L013 330μH
C063 270p
L014 470μH
C064 120p
C097 47 10V
C098 0.01 F
CN002 16P
1 SHP
2 N.C
3 VIN
4 GND
5 N.C.
6 V OUT
7 N.C
8 LP
9 Q.VD
10 JOG
11 SYNC
12 PAL 60
13 SW 9V
14 RENTAL
15 SECAM ACK
16 4.43NTSC
TO MA-119 BOARD CN-102
(See Page 79)

no mark : REC/PB mode

( ) : REC mode

⟨ ⟩ : PB mode

**YC-120 BOARD**


17
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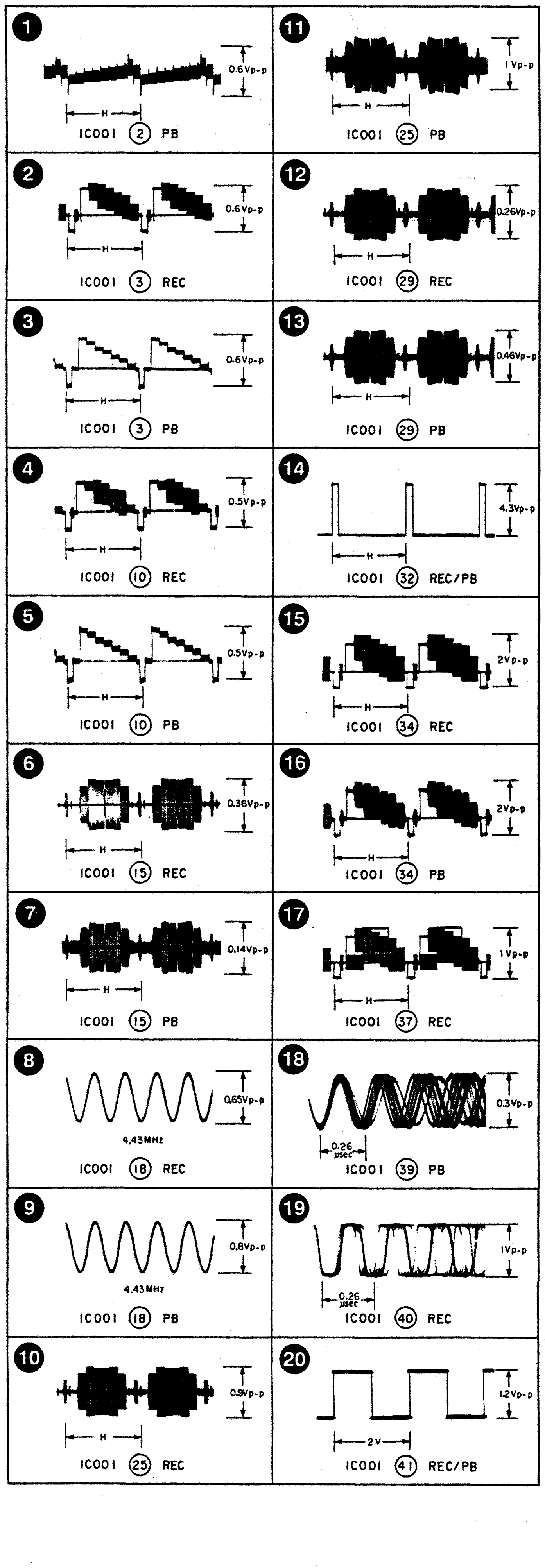
25
26
27
Q010,025
JOG SWITCH
Q010
UN2113
R080
4700
4.7
Q025
UN2213
5.2
R064
33k
C098
0.01
F
C097
47
10V
JW001
C074
0.01
2.5
6dB AMP
5.1
L016
100μH
R073
22k
C081
820p
C082
0.01
C083
47
R111
1k
L017
100μH
0.5
5.2
REG
Q110
UN2211
PAL 60
SWITCH
IC004
BA7025L
PAL / SECAM
DISCRIMINATOR
C089
47
C107
0.01
mode
CN002 16P
1 SHP
2 N.C
3 VIN
4 GND
5 N.C.
6 V OUT
7 N.C
8 LP
9 Q.VD
10 JOG
11 SYNC
12 PAL 60
13 SW 9V
14 RENTAL
15 SECAM ACK
16 4.43NTSC
TO MA-119 BOARD
CN-102
(See Page 79)

**YC-120 BOARD**

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | ➡ | ➡ | ➡ | |
| PB | ⇨ | ⇨ | ⇨ | |

**YC-120** BOARD



( DIODE )

| | | | |
|---|---|---|---|
| D402 | 8-719-101-50 | DIODE | RD5.1E-L2 |
| D403 | 8-719-911-19 | DIODE | 1SS119 |
| D501 | 8-719-911-19 | DIODE | 1SS119 |
| D506 | 8-719-911-19 | DIODE | 1SS119 |
| D507 | 8-719-200-82 | DIODE | 11ES2 |
| D701 | 8-759-157-40 | IC | uPC574J |
| D702 | 8-719-911-19 | DIODE | 1SS119 |
| D703 | 8-719-911-19 | DIODE | 1SS119 |
| D704 | 8-719-911-19 | DIODE | 1SS119 |

( IC )

| | | | |
|---|---|---|---|
| IC201 | 8-759-805-20 | IC | LA7297 |
| IC301 | 8-759-045-59 | IC | uPD6450GT-606 |
| IC302 | 8-759-996-03 | IC | LVA519S |
| ⚠IC401 | 8-759-822-09 | IC | LB1641 |
| IC402 | 8-759-912-77 | IC | uPC324C |
| IC403 | 8-759-990-82 | IC | TL082CP |
| ⚠IC405 | 8-759-246-14 | IC | TA8823N |
| IC406 | 8-759-981-85 | IC | RC4556D |
| IC407 | 8-759-135-80 | IC | uPC358C |
| IC501 | 8-752-836-19 | IC | CXP80724-037Q |
| IC502 | 8-759-501-99 | IC | ST93C46AB1 |
| IC801 | 8-759-701-59 | IC | NJM78M09FA |
| IC901 | 8-759-927-56 | IC | BA7021 |
| IC951 | 8-759-513-05 | IC | LVA521S |

( TRANSISTOR )

| | | | |
|---|---|---|---|
| Q103 | 8-729-424-18 | TRANSISTOR | UN2113 |
| Q201 | 8-729-140-96 | TRANSISTOR | KSC1008 |
| Q301 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q302 | 8-729-421-19 | TEANSISTOR | UN2213 |
| Q305 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q307 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q401 | 8-729-423-42 | TRANSISTOR | 2SA1309A-R |
| Q402 | 8-729-424-12 | TRANSISTOR | UN2112 |
| Q404 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q405 | 8-729-421-19 | TRANSISTOR | UN2213 |
| Q406 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q407 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q408 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q409 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q410 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q701 | 8-729-424-08 | TRANSISTOR | UN2111 |
| Q703 | 8-729-424-08 | TRANSISTOR | UN2111 |
| Q705 | 8-729-424-08 | TRANSISTOR | UN2111 |
| Q709 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q710 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q714 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q715 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q717 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q718 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q719 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q720 | 8-729-901-02 | TRANSISTOR | DTC124XK |
| Q721 | 8-729-422-37 | TRANSISTOR | 2SB709A-R |
| Q901 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE |
| Q902 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |
| Q903 | 8-729-422-28 | TRANSISTOR | 2SD601A-R |

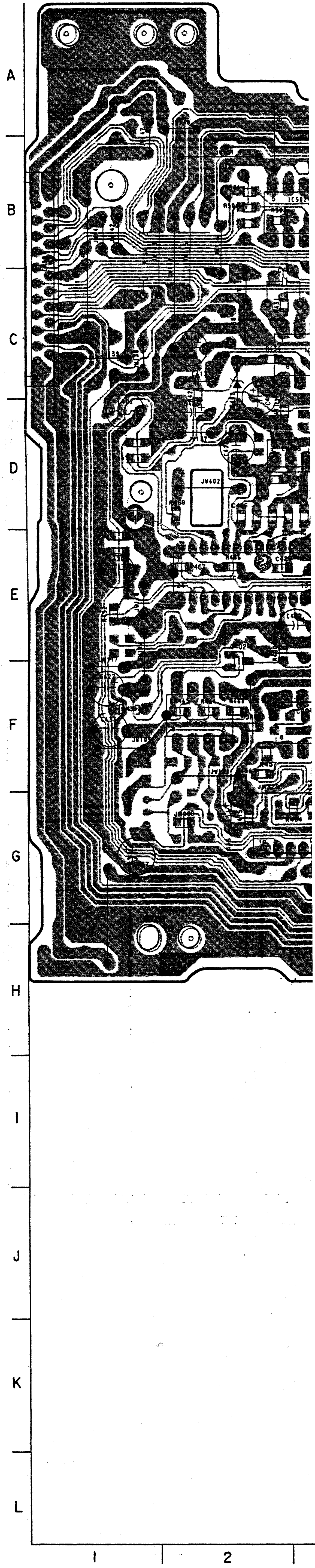
## MA-119 (SERVO/SYSTEM CONTROL, AUDIO, TUNER) PRINTE

— Ref. No. MA-119 BOARD: 3000 series —

MA-119 BOARD

| | |
|---|---|
| D402 | C-2 |
| D403 | C-3 |
| D501 | D-5 |
| D506 | D-5 |
| D507 | G-7 |
| D701 | A-7 |
| D702 | B-7 |
| D703 | B-6 |
| D704 | C-11 |
| IC201 | F-9 |
| IC301 | D-7 |
| IC302 | D-10 |
| IC401 | F-4 |
| IC402 | E-4 |
| IC403 | C-3 |
| IC405 | E-2 |
| IC406 | F-2 |
| IC407 | F-3 |
| IC501 | C-4 |
| IC502 | B-3 |
| IC801 | I-15 |
| IC901 | G-15 |
| IC951 | E-15 |
| Q103 | E-11 |
| Q201 | E-11 |
| Q305 | D-9 |
| Q307 | D-12 |
| Q401 | F-6 |
| Q402 | E-2 |
| Q404 | F-12 |
| Q405 | F-12 |
| Q406 | F-12 |
| Q407 | E-12 |
| Q408 | E-12 |
| Q409 | F-12 |
| Q410 | F-12 |
| Q701 | B-8 |
| Q703 | B-9 |
| Q705 | B-9 |
| Q709 | B-8 |
| Q710 | A-7 |
| Q714 | B-14 |
| Q715 | C-14 |
| Q717 | B-13 |
| Q718 | B-8 |
| Q719 | B-6 |
| Q720 | C-10 |
| Q721 | C-11 |
| Q901 | H-15 |
| Q902 | H-15 |
| Q903 | H-15 |

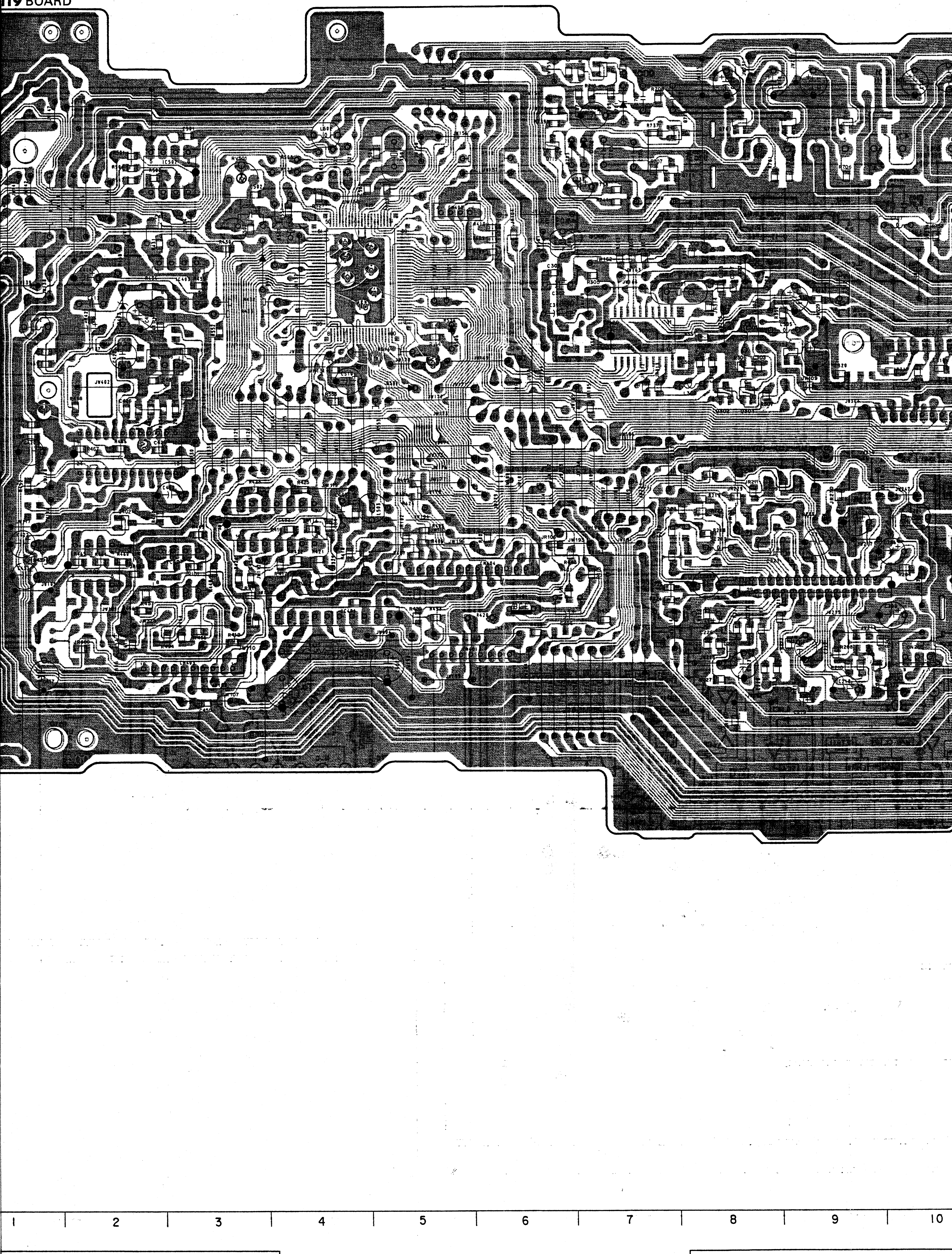
**MA-119** BOARD

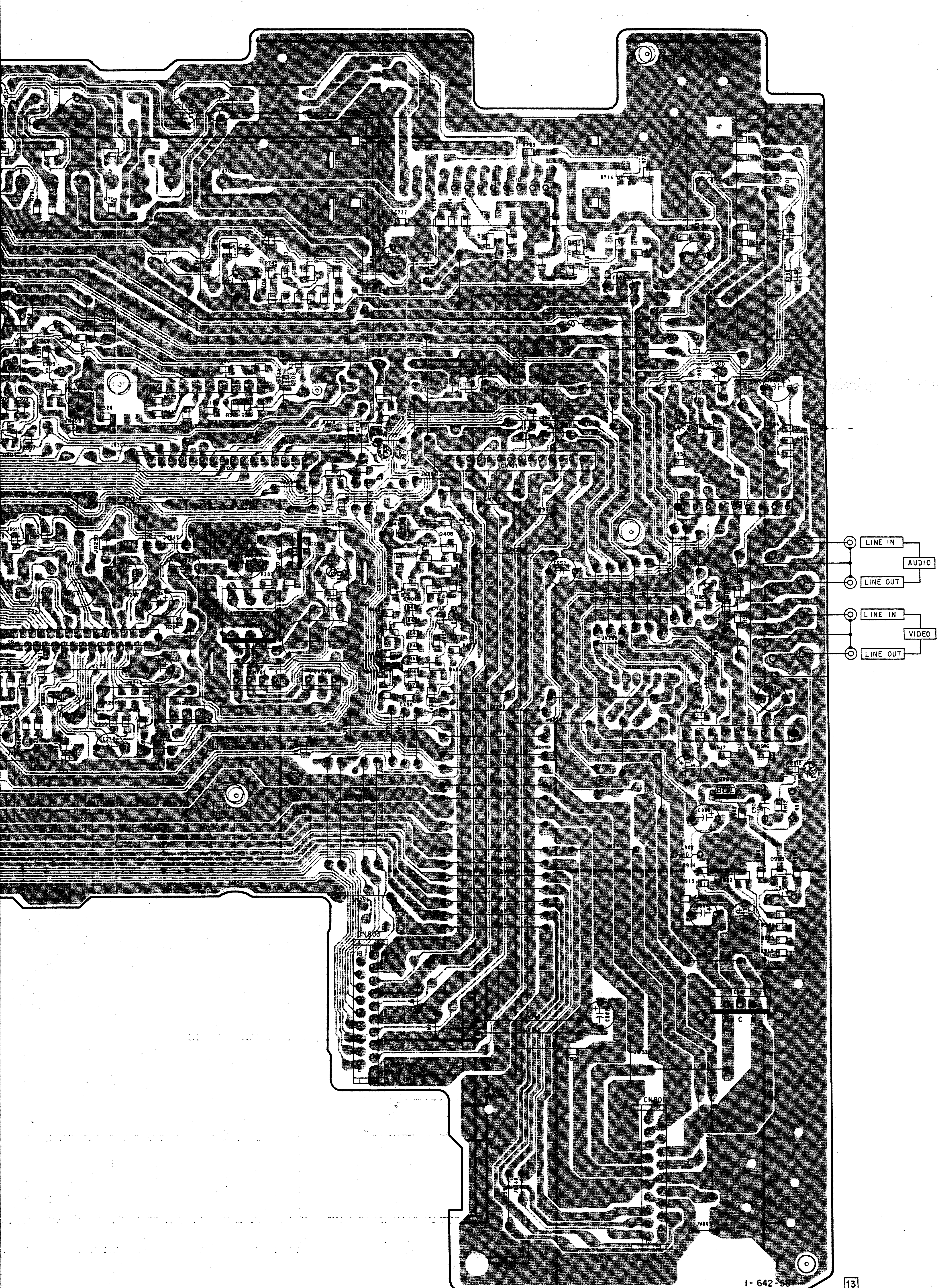


## CONTROL, AUDIO, TUNER) PRINTED WIRING BOARD

eries —

## 119 BOARD


1
2
3
4
5
6
7
8
9
10

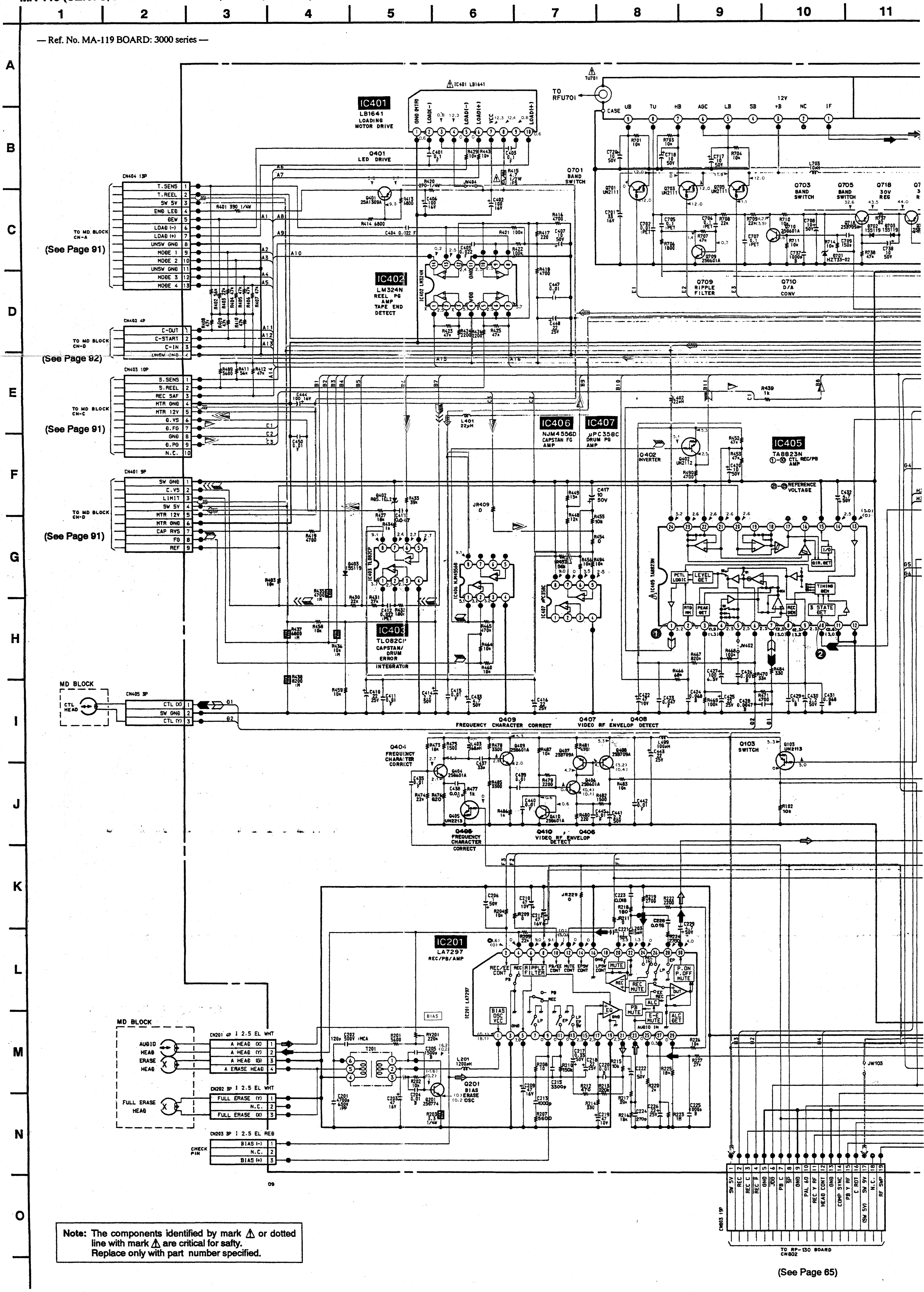

LINE IN
AUDIO
LINE OUT
LINE IN
VIDEO
LINE OUT
CN803
CN801
1-642-567
13
9
10
11
12
13
14
15

RVO/SYSTEM CONTROL, AUDIO, TUNER

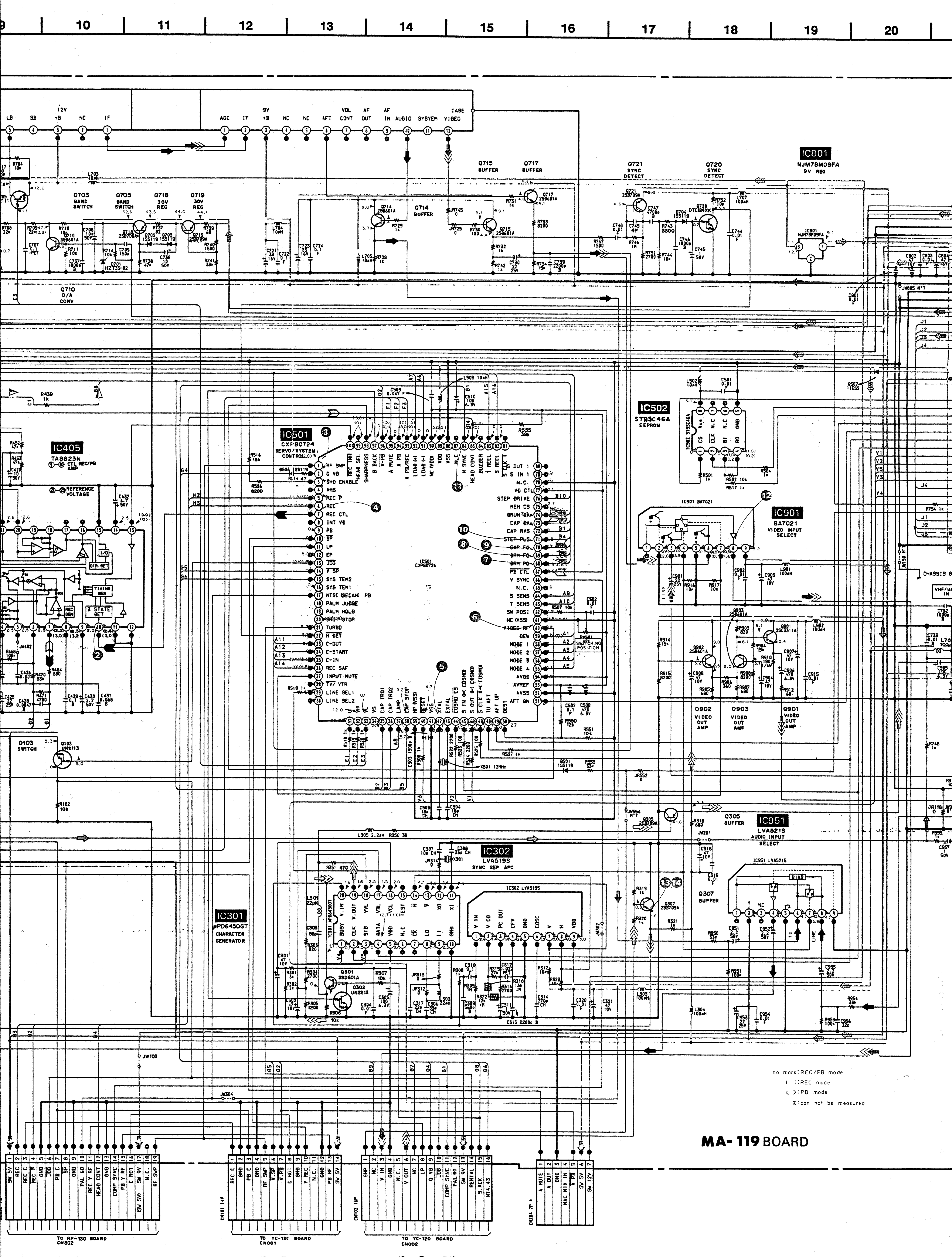
SERVO/SYSTEM CONTROL, AUDIO, TUNER

# MA-119 (SERVO/SYSTEM CONTROL, AUDIO, TUNER) SCHEMATIC DIAGRAM

— Ref. No. MA-119 BOARD: 3000 series —


1
2
3
4
5
6
7
8
9
10
11
A
B
C
D
E
F
G
H
I
J
K
L
M
N
O
IC401
LB1641
LOADING MOTOR DRIVE
Q401
LED DRIVE
IC402
LM324N
REEL PG AMP
TAPE END DETECT
IC403
TL082CP
CAPSTAN/DRUM ERROR INTEGRATOR
IC406
NJM4556D
CAPSTAN FG AMP
IC407
μPC358C
DRUM PG AMP
IC405
TA8823N
CTL REC/PB AMP
REFERENCE VOLTAGE
Q402
INVERTER
Q409
FREQUENCY CHARACTER CORRECT
Q407, Q408
VIDEO RF ENVELOP DETECT
Q404
FREQUENCY CHARACTER CORRECT
Q405
FREQUENCY CHARACTER CORRECT
Q410, Q406
VIDEO RF ENVELOP DETECT
Q103
SWITCH
TO RFU701
TU701
Q701
BAND SWITCH
Q703
BAND SWITCH
Q705
BAND SWITCH
Q718
30V REG
Q709
RIPPLE FILTER
Q710
D/A CONV
IC201
LA7297
REC/PB/AMP
Q201
BIAS OSC
T201
MD BLOCK
CTL HEAD
AUDIO HEAD
ERASE HEAD
FULL ERASE HEAD
CHECK PIN
CN404 13P
TO MD BLOCK CN-A
(See Page 91)
CN402 4P
TO MD BLOCK CN-D
(See Page 92)
CN403 10P
TO MD BLOCK CN-C
(See Page 91)
CN401 9P
TO MD BLOCK CN-D
(See Page 91)
CN405 3P
CN201 4P
CN202 3P
CN203 3P
CN603 19P
TO RP-130 BOARD CN602
(See Page 65)

**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.


9
10
11
12
13
14
15
16
17
18
19
20
12V +B
LB
SB
NC
IF
AGC
IF
9V +B
NC
NC
AFT
VOL CONT
AF OUT
AF IN
AUDIO
SYSYEM
CASE VIDEO
Q703 BAND SWITCH
Q705 BAND SWITCH
Q718 30V REG
Q719 30V REG
Q710 D/A CONV
Q714 BUFFER
Q715 BUFFER
Q717 BUFFER
Q721 SYNC DETECT
Q720 SYNC DETECT
IC801
NJM78M09FA
9V REG
IC405
TA8823N
①-⑬ CTL REC/PB AMP
㉑-㉓ REFERENCE VOLTAGE
IC501
CXP80724
SERVO/SYSTEM CONTROL
IC502
ST93C46A
EEPROM
IC901
BA7021
VIDEO INPUT SELECT
Q902 VIDEO OUT AMP
Q903 VIDEO OUT AMP
Q901 VIDEO OUT AMP
Q103 SWITCH
IC301
μPD6450GT
CHARACTER GENERATOR
IC302
LVA519S
SYNC SEP AFC
Q305 BUFFER
Q307 BUFFER
IC951
LVA521S
AUDIO INPUT SELECT
X501 12MHz
CHASSIS
CN101 14P
CN102 16P
CN204 7P
SW 5V
REC C
REC P
JOG
PB C
SP
GND
PAL 60
REC Y RF
HEAD GND
COMP SYNC
PB Y RF
C ROT
SW 9V
RF SWP
PB C
RF SWP
V.SP
V.PB
C ROT
Y REC
N.C.
PB RF
SW 5V
SHP
NC
V IN
N.C.
V OUT
LP
Q V0
COMP SYNC
PAL 60
SW 9V
RENTAL
S.ACK
NT4.43
A MUTE
A OUT
GND
MAC MIX IN
V PB
SW 5V
SW 12V
TO RP-130 BOARD CN802
TO YC-120 BOARD CN001
TO YC-120 BOARD CN002

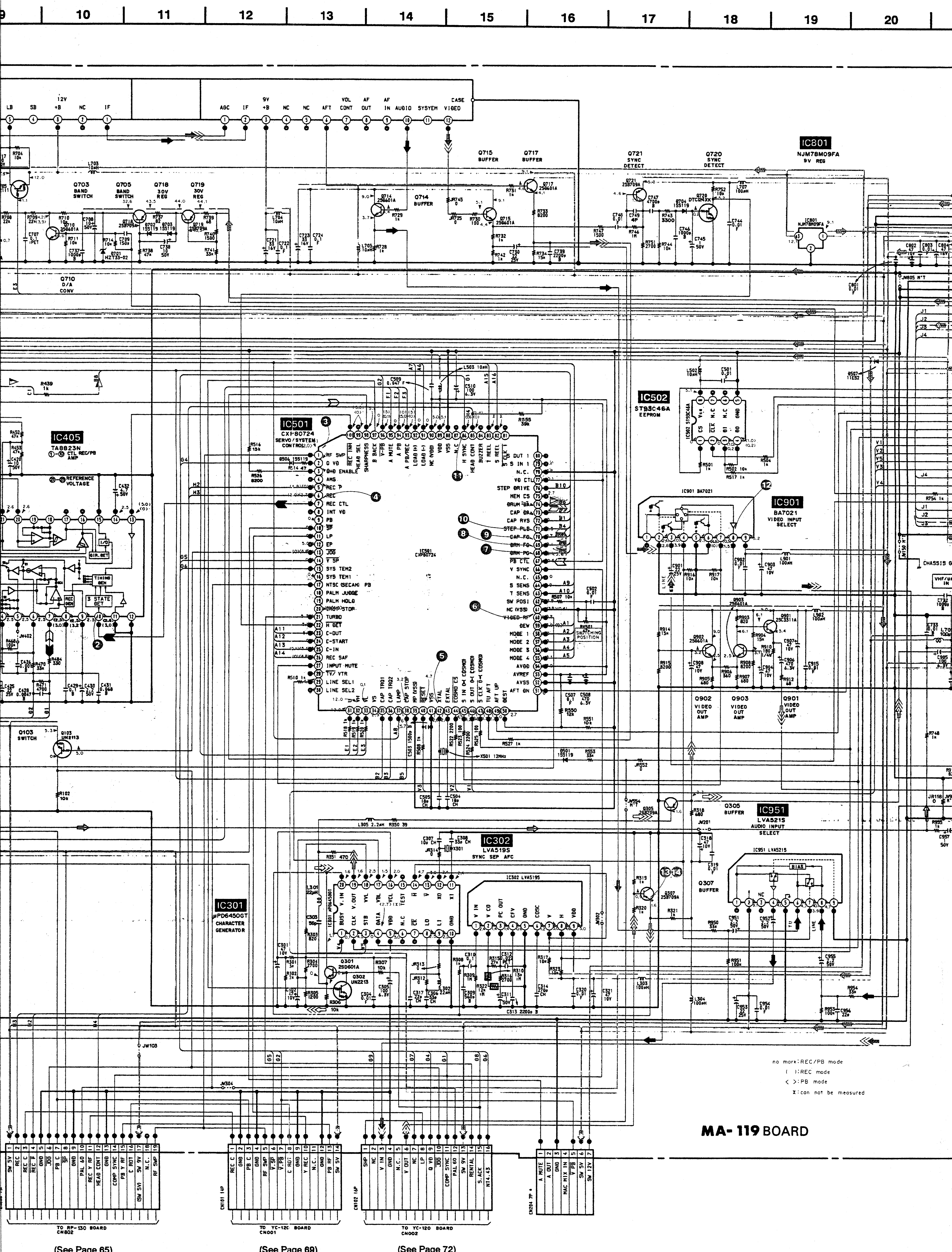
no mark:REC/PB mode
( ):REC mode
< >:PB mode
X:can not be measured

## MA-119 BOARD

(See Page 65)

(See Page 69)

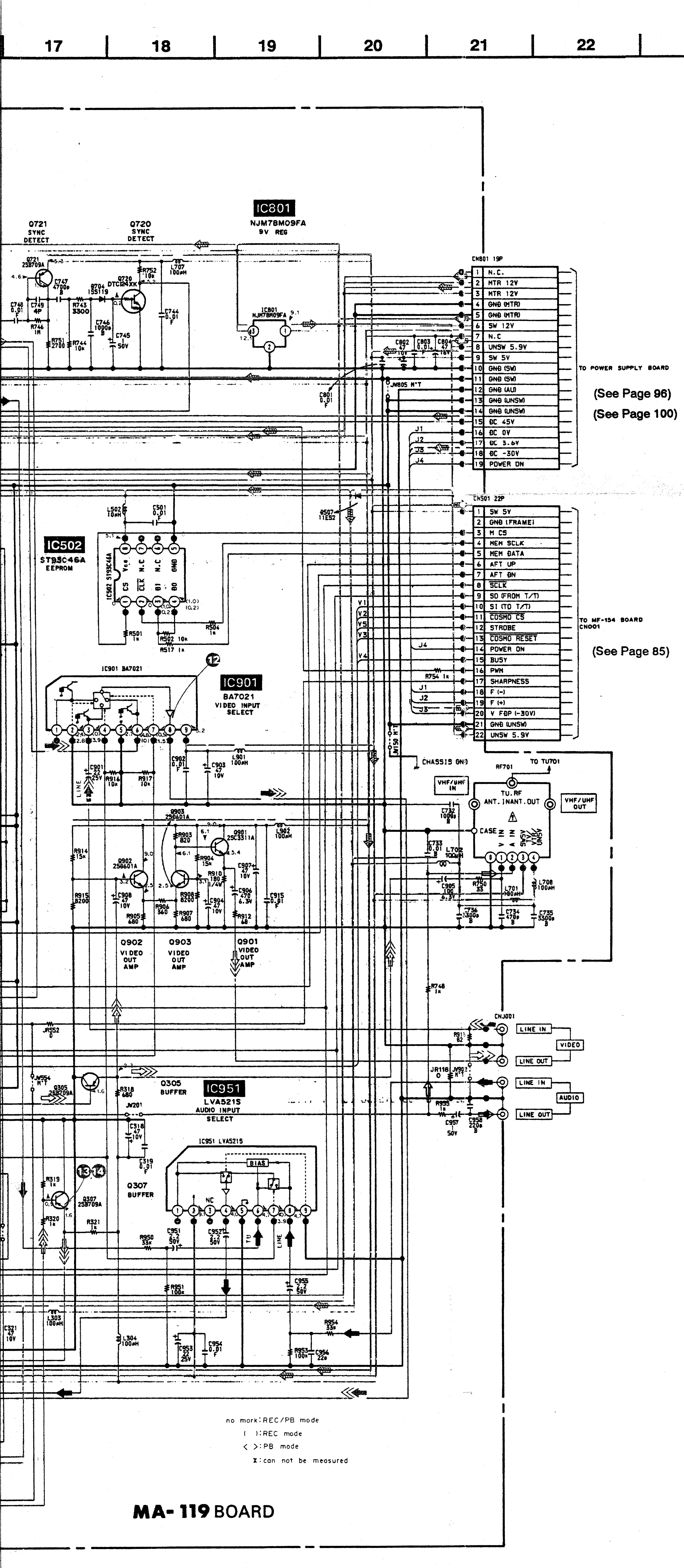
(See Page 72)


9
10
11
12
13
14
15
16
17
18
19
20
LB
SB
12V +B
NC
IF
AGC
IF
9V +B
NC
NC
AFT
VOL CONT
AF OUT
AF IN
AUDIO
SYSYEM
CASE VIDEO
Q703 BAND SWITCH
Q705 BAND SWITCH
Q718 30V REG
Q719 30V REG
Q710 D/A CONV
Q714 2SB601A
Q714 BUFFER
Q715 BUFFER
Q717 BUFFER
Q721 SYNC DETECT
Q720 SYNC DETECT
IC801
NJM78M09FA
9V REG
IC405
TA8823N
①-⑬ CTL REC/PB AMP
㉑-㉘ REFERENCE VOLTAGE
TIMING GEN
3 STATE DET
REC GEN
DIR.DET
Q103 SWITCH
Q103 UN2113
IC501
CXP80724
SERVO/SYSTEM CONTROL
IC502
ST93C46A
EEPROM
IC901
BA7021
VIDEO INPUT SELECT
Q902 VIDEO OUT AMP
Q903 VIDEO OUT AMP
Q901 VIDEO OUT AMP
Q305 BUFFER
IC951
LVA521S
AUDIO INPUT SELECT
IC302
LVA519S
SYNC SEP AFC
IC301
μPD6450GT
CHARACTER GENERATOR
Q307 BUFFER
Q301 2SD601A
Q302 UN2213
X501 12MHz
RV501 SWITCHING POSITION
CHASSIS G
VHF/UHF IN
TO RP-130 BOARD CN802
TO YC-120 BOARD CN001
TO YC-120 BOARD CN002
CN101 14P
CN102 16P
CN204 7P
no mark:REC/PB mode
( ):REC mode
< >:PB mode
X:can not be measured
MA-119 BOARD

(See Page 65)

(See Page 69)

(See Page 72)


17
18
19
20
21
22
23
24
25
26
27
Q721 SYNC DETECT
Q720 SYNC DETECT
IC801
NJM78M09FA
9V REG
CN801 19P
1 N.C.
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 N.C
8 UNSW 5.9V
9 SW 5V
10 GND (SW)
11 GND (SW)
12 GND (AU)
13 GND (UNSW)
14 GND (UNSW)
15 DC 45V
16 DC 0V
17 DC 3.6V
18 DC -30V
19 POWER ON
TO POWER SUPPLY BOARD
(See Page 96)
(See Page 100)
IC502
ST93C46A
EEPROM
CN501 22P
1 SW 5V
2 GND (FRAME)
3 M CS
4 MEM SCLK
5 MEM DATA
6 AFT UP
7 AFT DN
8 SCLK
9 SO (FROM T/T)
10 SI (TO T/T)
11 COSMO CS
12 STROBE
13 COSMO RESET
14 POWER ON
15 BUSY
16 PWM
17 SHARPNESS
18 F (-)
19 F (+)
20 V FDP (-30V)
21 GND (UNSW)
22 UNSW 5.9V
TO MF-154 BOARD CN001
(See Page 85)
IC901
BA7021
VIDEO INPUT SELECT
CHASSIS GND
RF701
TO TU701
VHF/UHF IN
TU.RF ANT.INANT.OUT
VHF/UHF OUT
Q902 VIDEO OUT AMP
Q903 VIDEO OUT AMP
Q901 VIDEO OUT AMP
CNJ001
LINE IN
VIDEO
LINE OUT
LINE IN
AUDIO
LINE OUT
Q305 BUFFER
IC951
LVA5215
AUDIO INPUT SELECT
BIAS
Q307 BUFFER

no mark: REC/PB mode
( ): REC mode
< >: PB mode
※: can not be measured

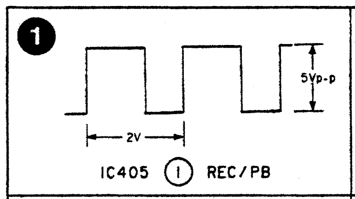
**MA-119** BOARD

- **SIGNAL PATH**

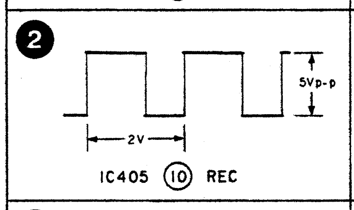
| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➾ | ➡ |
| PB | | | ⇨ | ⇨ |

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷ | |
| Drum servo (speed and phase) | | ▷ | |
| Capstan speed servo | | ▷ | |
| Capstan phase servo | | ▷ | |
| Capstan servo (speed and phase) | | ▷ | |
| Ref. signal | ➧ | | ▷ |

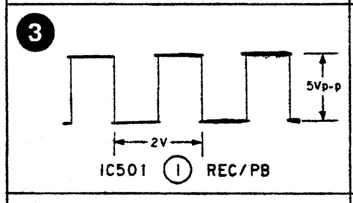
**MA-119** BOARD



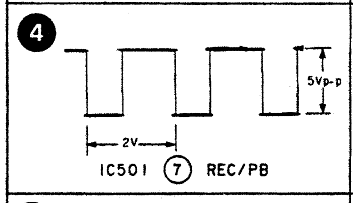
① IC405 ① REC/PB



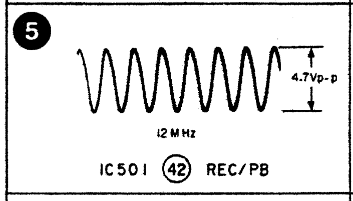
② IC405 ⑩ REC



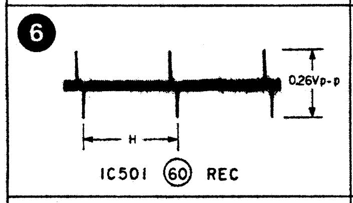
③ IC501 ① REC/PB



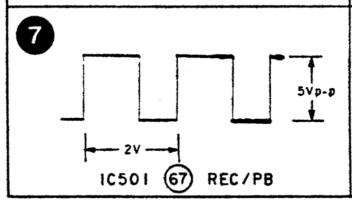
④ IC501 ⑦ REC/PB



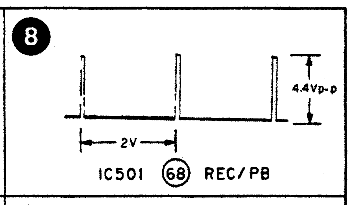
⑤ IC501 (42) REC/PB



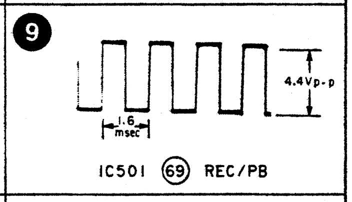
⑥ IC501 (60) REC



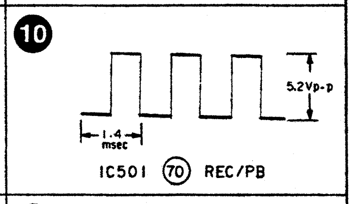
⑦ IC501 (67) REC/PB



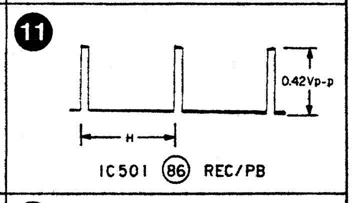
⑧ IC501 (68) REC/PB



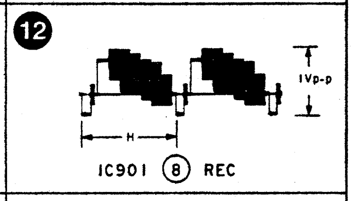
⑨ IC501 (69) REC/PB



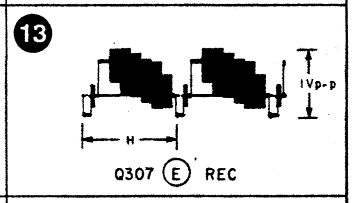
⑩ IC501 (70) REC/PB



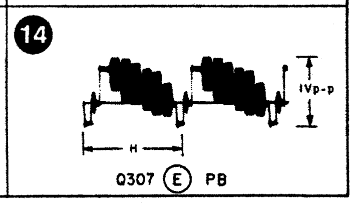
⑪ IC501 (86) REC/PB



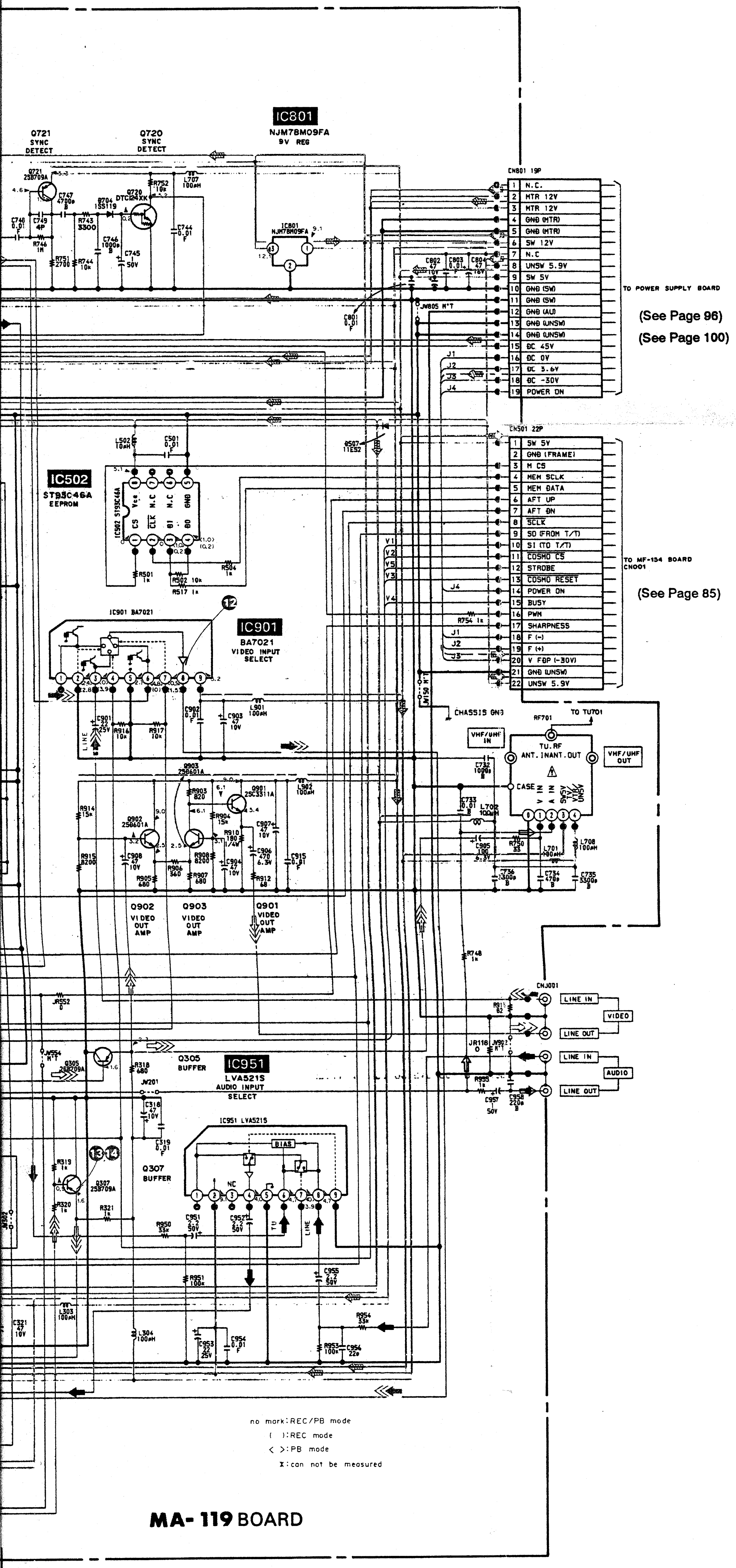
⑫ IC901 ⑧ REC



⑬ Q307 Ⓔ REC



⑭ Q307 Ⓔ PB


IC801
NJM78M09FA
9V REG
Q721
SYNC
DETECT
Q720
SYNC
DETECT
CN801 19P
1 N.C.
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 N.C
8 UNSW 5.9V
9 SW 5V
10 GND (SW)
11 GND (SW)
12 GND (AU)
13 GND (UNSW)
14 GND (UNSW)
15 DC 45V
16 DC 0V
17 DC 3.6V
18 DC -30V
19 POWER ON
TO POWER SUPPLY BOARD
(See Page 96)
(See Page 100)
CN501 22P
1 SW 5V
2 GND (FRAME)
3 M CS
4 MEM SCLK
5 MEM DATA
6 AFT UP
7 AFT DN
8 SCLK
9 SO (FROM T/T)
10 SI (TO T/T)
11 COSMO CS
12 STROBE
13 COSMO RESET
14 POWER ON
15 BUSY
16 PWM
17 SHARPNESS
18 F (-)
19 F (+)
20 V FDP (-30V)
21 GND (UNSW)
22 UNSW 5.9V
TO MF-154 BOARD
CN001
(See Page 85)
IC502
ST93C46A
EEPROM
IC901 BA7021
IC901
BA7021
VIDEO INPUT
SELECT
CHASSIS GND
RF701
TO TU701
VHF/UHF IN
TU.RF
ANT.IN ANT.OUT
VHF/UHF OUT
CASE
Q902
VIDEO
OUT
AMP
Q903
VIDEO
OUT
AMP
Q901
VIDEO
OUT
AMP
CNJ001
LINE IN
LINE OUT
VIDEO
LINE IN
LINE OUT
AUDIO
Q305
BUFFER
IC951
LVA521S
AUDIO INPUT
SELECT
IC951 LVA521S
BIAS
Q307
BUFFER

no mark : REC/PB mode
( ) : REC mode
< > : PB mode
⌶ : can not be measured

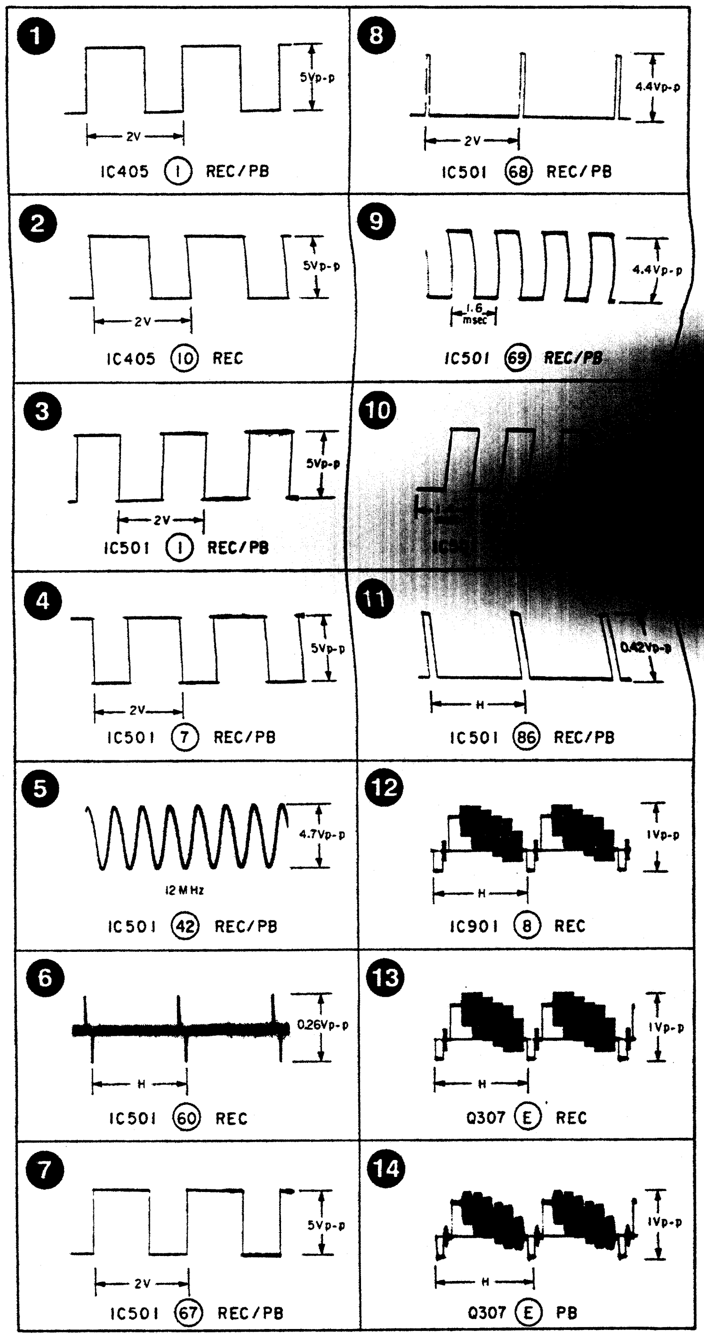
## MA-119 BOARD

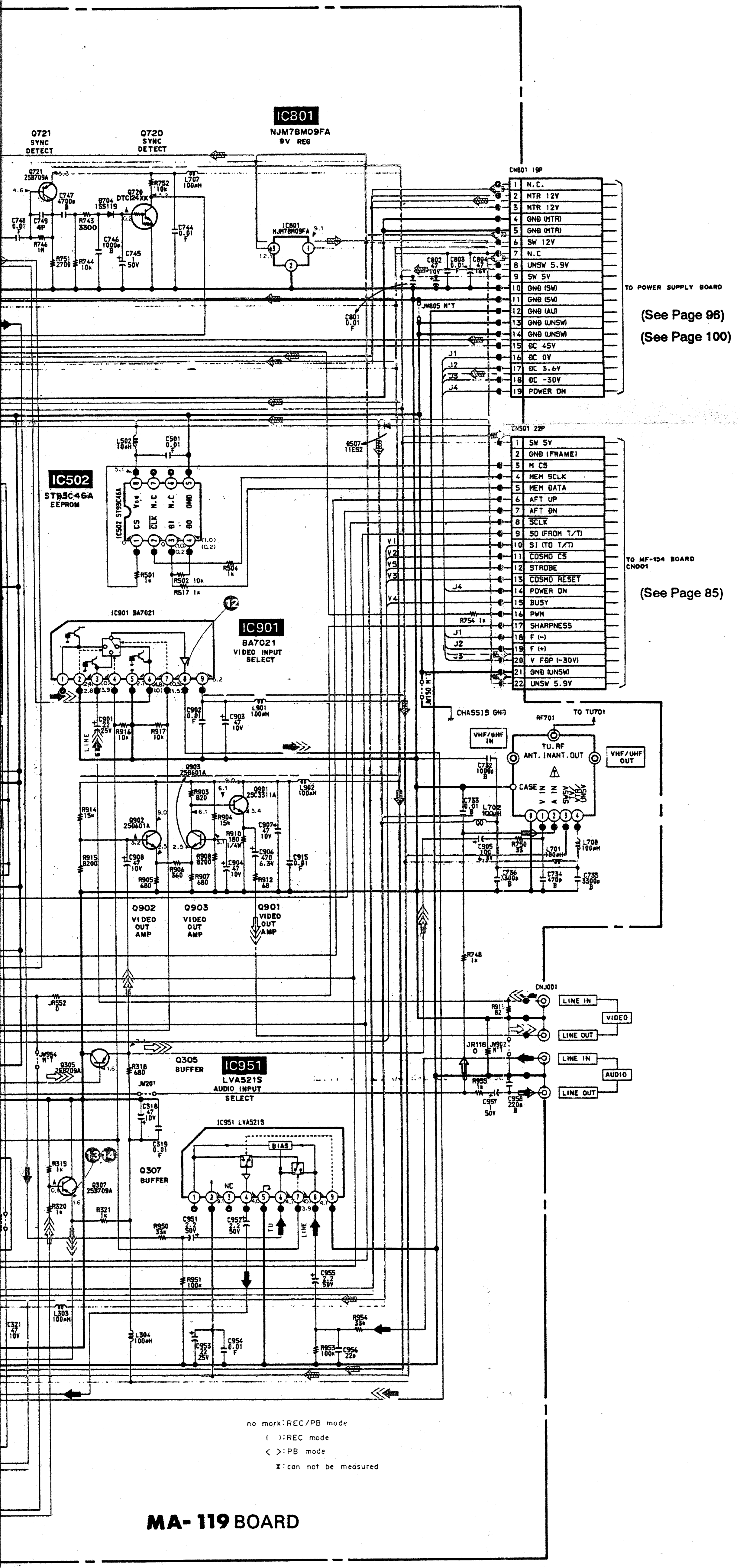
- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡》 | ➡ |
| PB | | | ⇨》 | ⇨ |

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▷》 | |
| Drum servo (speed and phase) | | ▷》》 | |
| Capstan speed servo | | ▱ | |
| Capstan phase servo | | ▱》 | |
| Capstan servo (speed and phase) | | ▱》》 | |
| Ref. signal | ➤ | | ⊃ |

## MA-119 BOARD



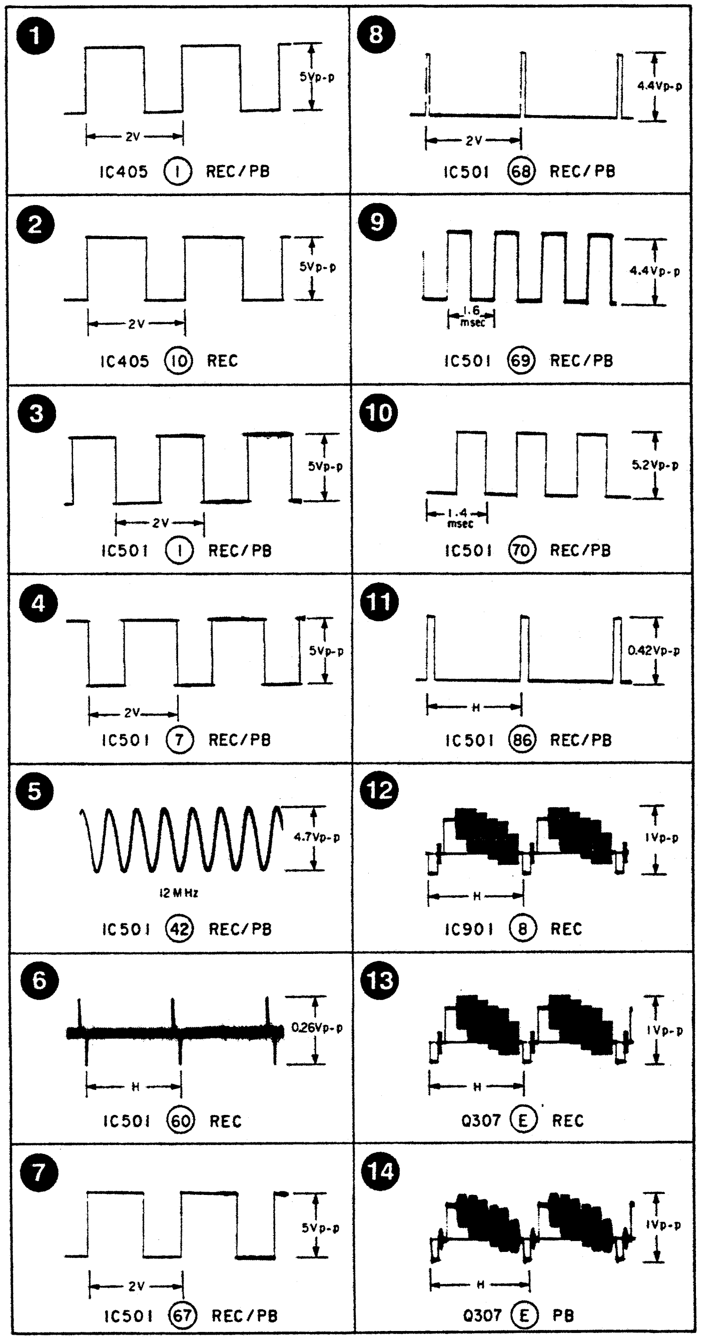

IC801
NJM78M09FA
9V REG
Q721
SYNC
DETECT
Q720
SYNC
DETECT
CN801 19P
1 N.C.
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 N.C
8 UNSW 5.9V
9 SW 5V
10 GND (SW)
11 GND (SW)
12 GND (AU)
13 GND (UNSW)
14 GND (UNSW)
15 DC 45V
16 DC 0V
17 DC 3.6V
18 DC -30V
19 POWER ON
TO POWER SUPPLY BOARD
(See Page 96)
(See Page 100)
CN501 22P
1 SW 5V
2 GND (FRAME)
3 M CS
4 MEM SCLK
5 MEM DATA
6 AFT UP
7 AFT DN
8 SCLK
9 SD (FROM T/T)
10 SI (TO T/T)
11 COSMO CS
12 STROBE
13 COSMO RESET
14 POWER ON
15 BUSY
16 PWM
17 SHARPNESS
18 F (-)
19 F (+)
20 V FDP (-30V)
21 GND (UNSW)
22 UNSW 5.9V
TO MF-154 BOARD
CN001
(See Page 85)
IC502
ST93C46A
EEPROM
IC901
BA7021
VIDEO INPUT
SELECT
CHASSIS GND
RF701
TO TU701
VHF/UHF
IN
TU.RF
ANT.IN ANT.OUT
VHF/UHF
OUT
CASE
Q902
VIDEO
OUT
AMP
Q903
VIDEO
OUT
AMP
Q901
VIDEO
OUT
AMP
CN001
LINE IN
VIDEO
LINE OUT
LINE IN
AUDIO
LINE OUT
Q305
BUFFER
IC951
LVA521S
AUDIO INPUT
SELECT
Q307
BUFFER
BIAS
NC
TU
LINE
no mark: REC/PB mode
( ): REC mode
< >: PB mode
X: can not be measured
MA-119 BOARD

- **SIGNAL PATH**

| | VIDEO SIGNAL | | | AUDIO SIGNAL |
|---|---|---|---|---|
| | CHROMA | Y | Y/CHROMA | |
| REC | | | ➡» | ➡ |
| PB | | | ⇨» | ⇨ |

| | REC | REC/PB | PB |
|---|---|---|---|
| Drum speed servo | | ▷ | |
| Drum phase servo | | ▶ | |
| Drum servo (speed and phase) | | ▶» | |
| Capstan speed servo | | ▱ | |
| Capstan phase servo | | ▱» | |
| Capstan servo (speed and phase) | | ▱»» | |
| Ref. signal | ➤ | | ⊃ |

**MA-119** BOARD



## MF-154 (TIMER/MODE CONTROL), MF-155 (REMOTE CONTROL RECEIVER, EJECT/POWER SWITCH) PRINTED WIRI

— Ref. No. MF-154 BOARD: 4000 series, MF-155 BOARD: 5000 series —

〈 DIODE 〉

| | | | |
|---|---|---|---|
| D001 | 8-719-911-19 | DIODE | 1SS119 |
| D002 | 8-719-911-19 | DIODE | 1SS119 |
| D003 | 8-719-110-06 | DIODE | RD8.2ES-B1 |
| D004 | 8-719-911-19 | DIODE | 1SS119 |
| D005 | 8-719-911-19 | DIODE | 1SS119 |
| D006 | 8-719-911-19 | DIODE | 1SS119 |
| D007 | 8-719-911-19 | DIODE | 1SS119 |
| D008 | 8-719-911-19 | DIODE | 1SS119 |
| D010 | 8-719-911-19 | DIODE | 1SS119 |
| D011 | 8-719-911-19 | DIODE | 1SS119 |
| D012 | 8-719-911-19 | DIODE | 1SS119 |
| D013 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D014 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D015 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D016 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D017 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D018 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D019 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D020 | 8-719-109-93 | DIODE | RD6.2ES-B2 |
| D021 | 8-719-109-93 | DIODE | RD6.2ES-B2 |

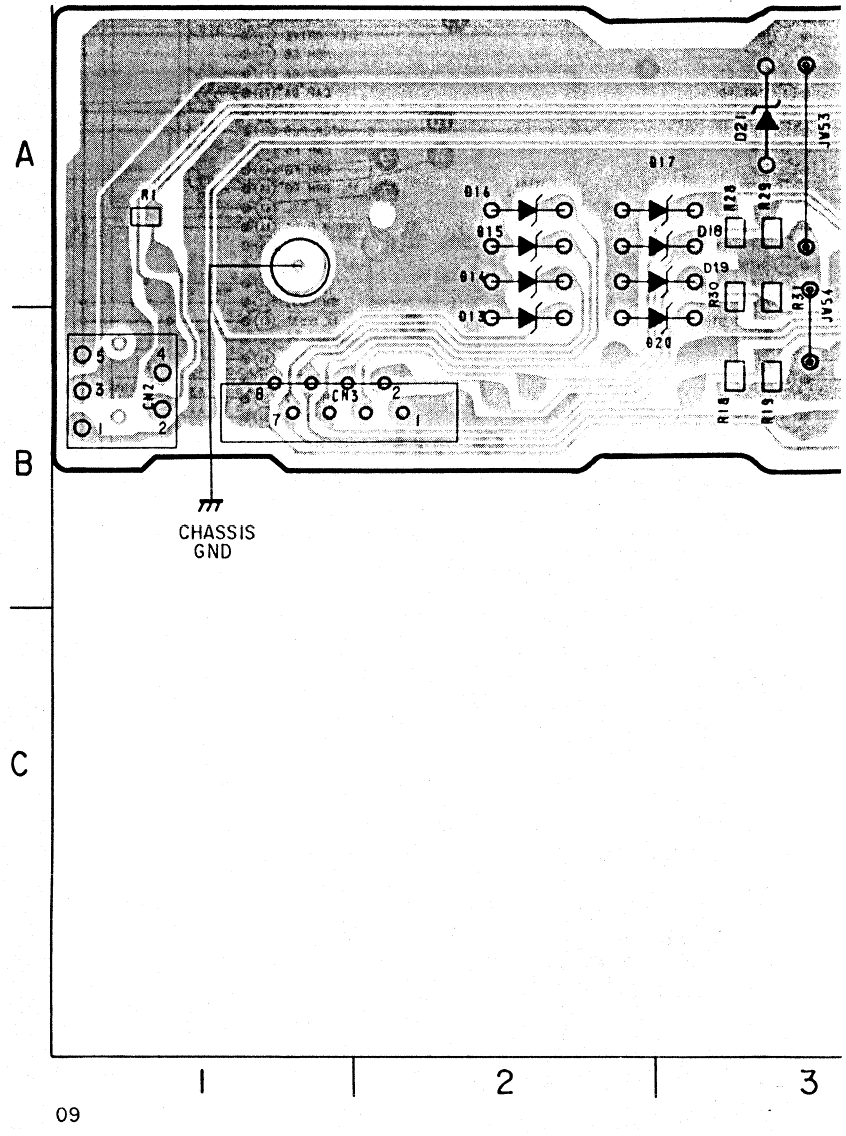
〈 IC 〉

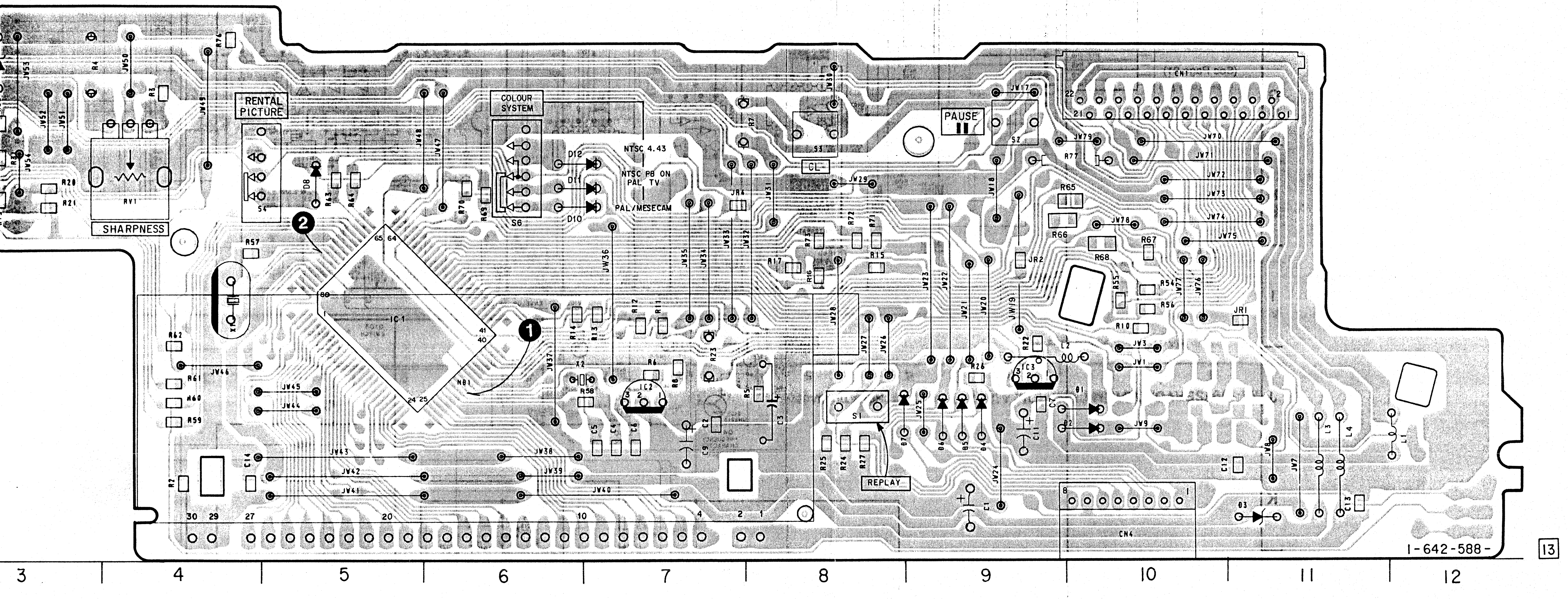
| | | | |
|---|---|---|---|
| IC001 | 8-752-836-49 | IC | CXP50116-281Q |
| IC002 | 8-759-515-58 | IC | PST572H |
| IC003 | 8-759-510-43 | IC | PST572C |

MF-154 BOARD

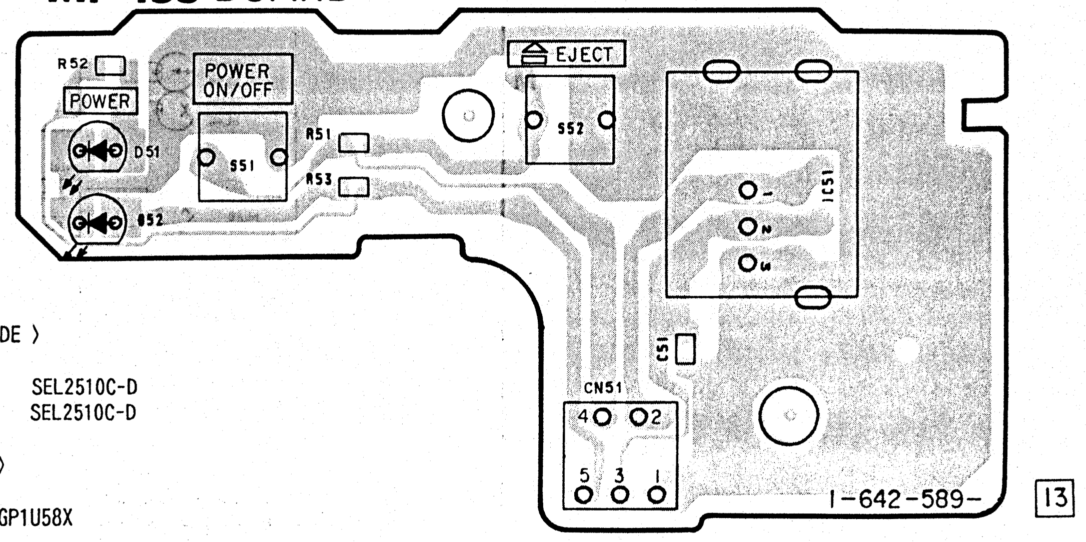
| | |
|---|---|
| D001 | C-10 |
| D002 | C-10 |
| D003 | C-11 |
| D004 | C-9 |
| D005 | C-9 |
| D006 | C-9 |
| D007 | C-8 |
| D008 | B-5 |
| D013 | B-2 |
| D014 | A-2 |
| D015 | A-2 |
| D016 | A-2 |
| D017 | A-3 |
| D018 | A-3 |
| D019 | A-3 |
| D020 | A-3 |
| IC001 | B-5 |
| IC002 | C-7 |
| IC003 | C-9 |

**MF-154** BOARD




RENTAL PICTURE
S4
SHARPNESS
RV1
COLOUR SYSTEM
S6
NTSC 4.43
NTSC PB ON PAL TV
PAL/MESECAM
D12
D11
D10
D8
IC1
IC2
IC3
X1
X2
CL
PAUSE
S3
S2
S1
REPLAY
CN1
CN4
1-642-588-
13
3
4
5
6
7
8
9
10
11
12

## MF-155 BOARD


R52
POWER
POWER ON/OFF
EJECT
S51
S52
D51
D52
R51
R53
IC51
C51
CN51
1-642-589-
13

〈 DIODE 〉

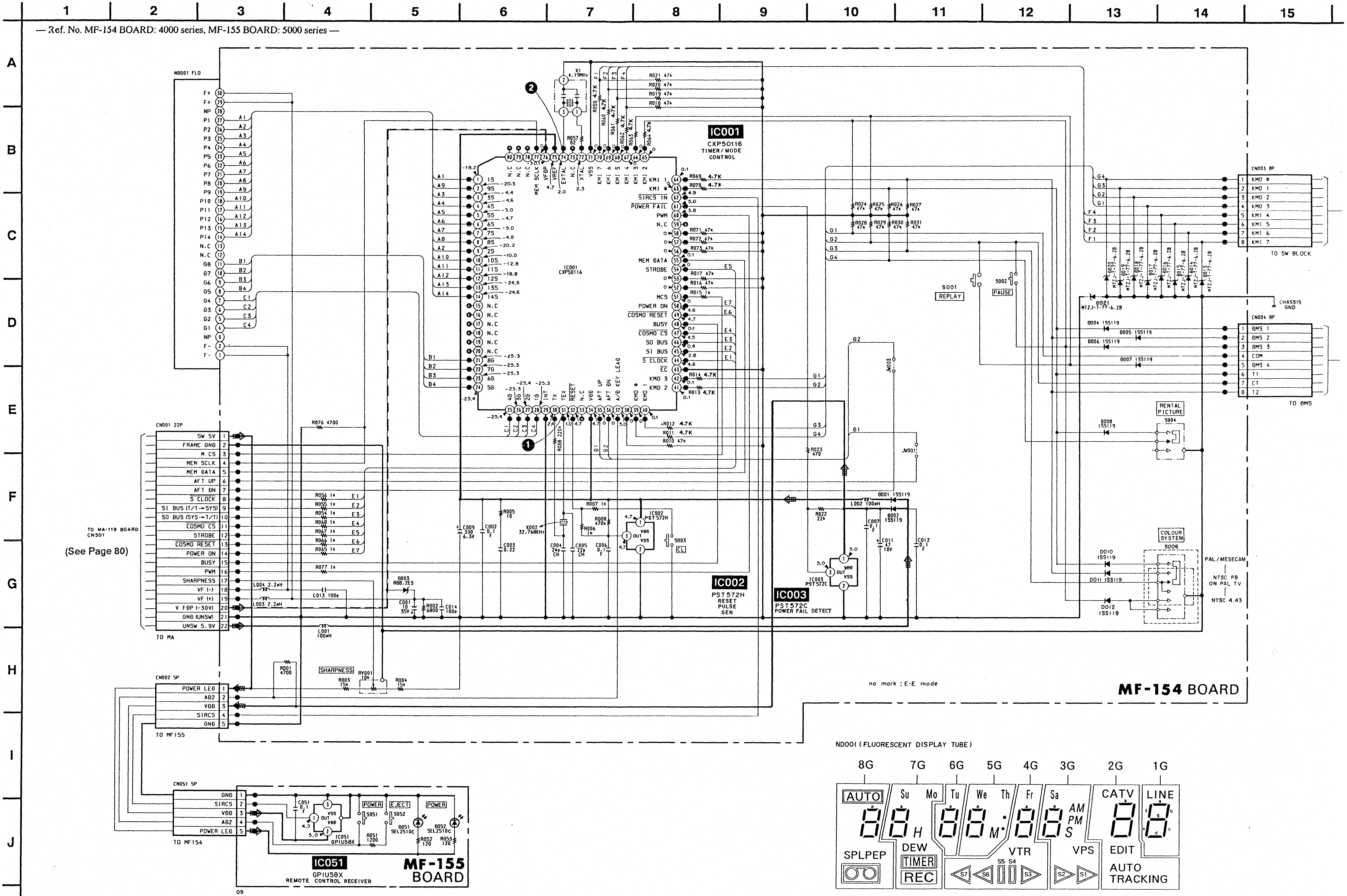
| | | | |
|---|---|---|---|
| D051 | 8-719-303-02 | DIODE | SEL2510C-D |
| D052 | 8-719-303-02 | DIODE | SEL2510C-D |

〈 IC 〉

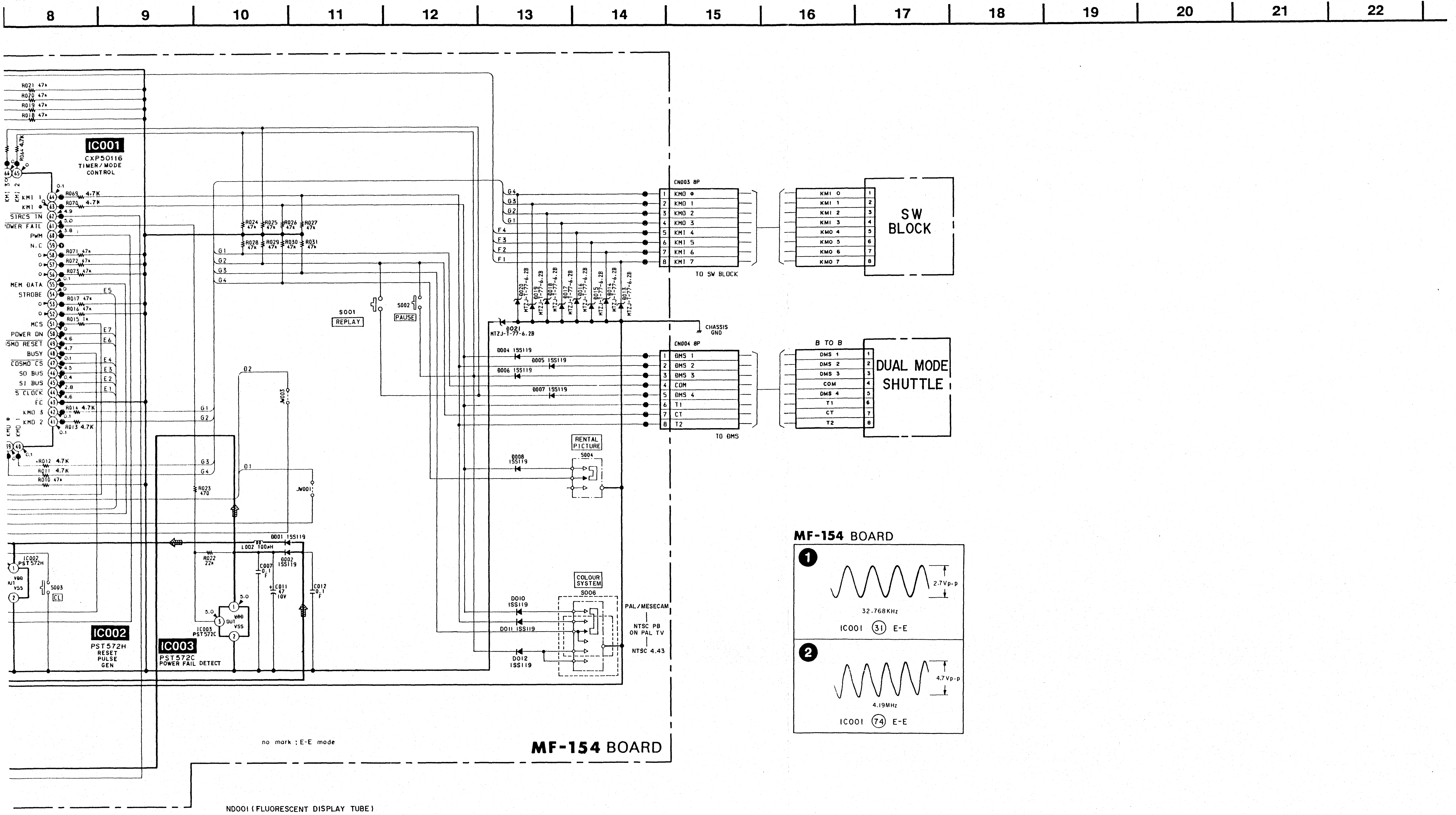
| | | | |
|---|---|---|---|
| IC051 | 1-466-833-11 | IC | GP1U58X |

## MF-154 (TIMER/MODE CONTROL), MF-155 (REMOTE CONTROL RECEIVER, EJECT/POWER SWITCH) SCHEMATIC DIAGRAMS

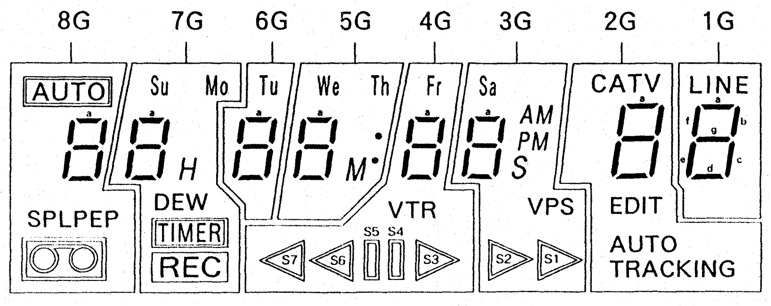
— Ref. No. MF-154 BOARD: 4000 series, MF-155 BOARD: 5000 series —



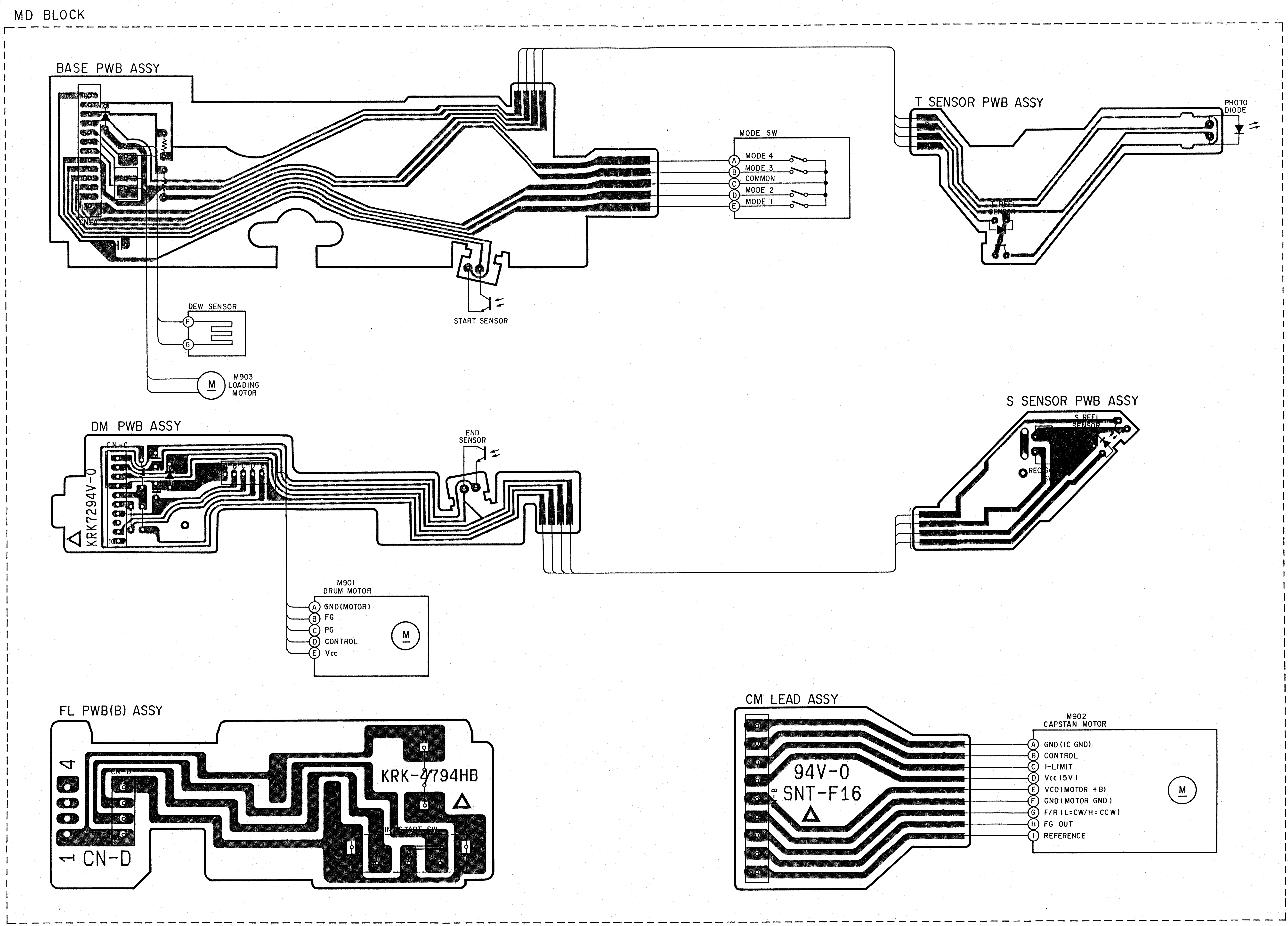
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
ND001 FLO
IC001
CXP50116
TIMER/MODE CONTROL
IC002
PST572H
RESET PULSE GEN
IC003
PST572C
POWER FAIL DETECT
IC051
GP1U58X
REMOTE CONTROL RECEIVER
CN001 22P
SW 5V
FRAME GND
M CS
MEM SCLK
MEM DATA
AFT UP
AFT ON
S CLOCK
SI BUS (T/I→SYS)
SO BUS (SYS→T/I)
COSMO CS
STROBE
COSMO RESET
POWER ON
BUSY
PWM
SHARPNESS
VF (-)
VF (+)
V FDP (-30V)
GND (UNSW)
UNSW 5.9V
TO MA
TO MA-119 BOARD CN501
(See Page 80)
CN002 5P
POWER LED
AD2
VDD
SIRCS
GND
TO MF155
CN051 5P
TO MF154
SHARPNESS
RV001 10k
S001 REPLAY
S002 PAUSE
S003 CL
S004 RENTAL PICTURE
S006 COLOUR SYSTEM
PAL/MESECAM
NTSC PB ON PAL TV
NTSC 4.43
CN003 8P
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
TO SW BLOCK
CHASSIS GND
CN004 8P
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
TO DMS
X1 4.19MHz
X002 32.768KHz
S051 POWER
S052 EJECT
D051 SEL2510C
D052 SEL2510C POWER
no mark : E-E mode
MF-154 BOARD
MF-155 BOARD
ND001 (FLUORESCENT DISPLAY TUBE)
8G 7G 6G 5G 4G 3G 2G 1G
AUTO
Su Mo Tu We Th Fr Sa
H
M
AM PM S
CATV
LINE
DEW
TIMER
REC
SPLPEP
VTR
VPS
EDIT
AUTO TRACKING
S7 S6 S5 S4 S3 S2 S1


8
9
10
11
12
13
14
15
16
17
18
19
20
21
22
IC001
CXP50116
TIMER/MODE
CONTROL
R021 47k
R020 47k
R019 47k
R018 47k
R064 4.7K
KMI 1
KMI 0
SIRCS IN
POWER FAIL
PWM
N.C
MEM DATA
STROBE
MCS
POWER ON
ISMO RESET
BUSY
COSMO CS
SO BUS
SI BUS
S CLOCK
FC
KMO 3
KMO 2
R069 4.7K
R070 4.7K
R071 47k
R072 47k
R073 47k
R017 47k
R016 47k
R015 1k
R014 4.7K
R013 4.7K
R012 4.7K
R011 4.7K
R010 47k
R024 47k
R025 47k
R026 47k
R027 47k
R028 47k
R029 47k
R030 47k
R031 47k
G1
G2
G3
G4
F1
F2
F3
F4
E1
E2
E3
E4
E5
E6
E7
D1
D2
S001
REPLAY
S002
PAUSE
W003
W001
R023 470
D021 MTZJ-T-77-6.2B
D013 MTZJ-T-77-6.2B
D014 MTZJ-T-77-6.2B
D015 MTZJ-T-77-6.2B
D016 MTZJ-T-77-6.2B
D017 MTZJ-T-77-6.2B
D018 MTZJ-T-77-6.2B
D019 MTZJ-T-77-6.2B
D020 MTZJ-T-77-6.2B
D004 1SS119
D005 1SS119
D006 1SS119
D007 1SS119
D008 1SS119
CN003 8P
KMO 0
KMO 1
KMO 2
KMO 3
KMI 4
KMI 5
KMI 6
KMI 7
TO SW BLOCK
KMI 0
KMI 1
KMI 2
KMI 3
KMO 4
KMO 5
KMO 6
KMO 7
SW BLOCK
CHASSIS GND
CN004 8P
DMS 1
DMS 2
DMS 3
COM
DMS 4
T1
CT
T2
TO DMS
B TO B
DUAL MODE SHUTTLE
RENTAL PICTURE
S004
COLOUR SYSTEM
S006
PAL/MESECAM
NTSC PB ON PAL TV
NTSC 4.43
D010 1SS119
D011 1SS119
D012 1SS119
D001 1SS119
D002 1SS119
L002 100µH
R022 22k
C007 0.1 F
C011 47 10V
C012 0.1 F
IC002 PST572H
VDD
OUT
VSS
S003
CL
IC002
PST572H
RESET
PULSE
GEN
IC003
PST572C
POWER FAIL DETECT
5.0
no mark : E-E mode
MF-154 BOARD
MF-154 BOARD
❶
2.7Vp-p
32.768KHz
IC001 ㉛ E-E
❷
4.7Vp-p
4.19MHz
IC001 (74) E-E

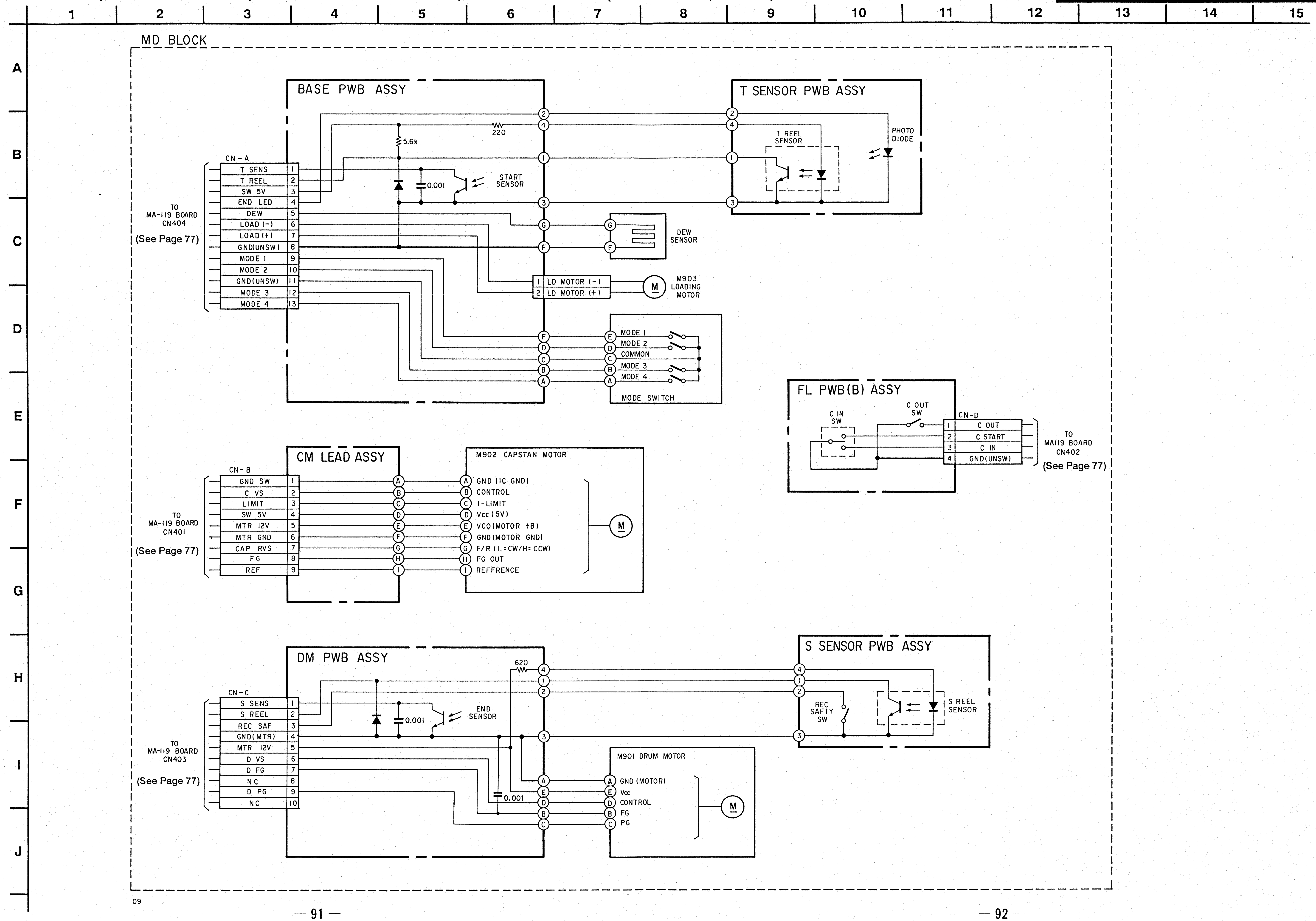
ND001 (FLUORESCENT DISPLAY TUBE)


8G
7G
6G
5G
4G
3G
2G
1G
AUTO
Su
Mo
Tu
We
Th
Fr
Sa
CATV
LINE
H
M
AM
PM
S
SPLPEP
DEW
TIMER
REC
VTR
VPS
EDIT
AUTO
TRACKING
S7
S6
S5
S4
S3
S2
S1

## MD BLOCK : BASE PWB ASSY (START SENSOR), CM LEAD ASSY (CAPSTAN MOTOR RELAY), DM PWB ASSY (END SENSOR), FL PWB ASSY (CASSETTE IN/OUT/START SW), S SENSOR PWB ASSY (S REEL SENSOR, REC SAFETY SW), T SENSOR PWB ASSY (T REEL SENSOR, END LED) PRINTED WIRING BOARDS


MD BLOCK
BASE PWB ASSY
CN-A
MODE SW
Ⓐ MODE 4
Ⓑ MODE 3
Ⓒ COMMON
Ⓓ MODE 2
Ⓔ MODE 1
T SENSOR PWB ASSY
PHOTO DIODE
T REEL SENSOR
START SENSOR
DEW SENSOR
Ⓕ
Ⓖ
M903 LOADING MOTOR
M
DM PWB ASSY
CN-C
KRK7294V-0
B C D E
END SENSOR
S SENSOR PWB ASSY
S REEL SENSOR
REC SAFETY SW
M901 DRUM MOTOR
Ⓐ GND(MOTOR)
Ⓑ FG
Ⓒ PG
Ⓓ CONTROL
Ⓔ Vcc
M
FL PWB(B) ASSY
4
1 CN-D
CN-D
KRK-4794HB
IN/START SW
CM LEAD ASSY
94V-0
SNT-F16
CN-B
M902 CAPSTAN MOTOR
Ⓐ GND (IC GND)
Ⓑ CONTROL
Ⓒ I-LIMIT
Ⓓ Vcc (5V)
Ⓔ VCO (MOTOR +B)
Ⓕ GND (MOTOR GND)
Ⓖ F/R (L=CW/H=CCW)
Ⓗ FG OUT
Ⓘ REFERENCE
M

## MD BLOCK : BASE PWB ASSY (START SENSOR), CM LEAD ASSY (CAPSTAN MOTOR RELAY), DM PWB ASSY (END SENSOR), FL PWB ASSY (CASSETTE IN/OUT/START SW), S SENSOR PWB ASSY (S REEL SENSOR, REC SAFETY SW), T SENSOR PWB ASSY (T REEL SENSOR, END LED) SCHEMATIC DIAGRAMS

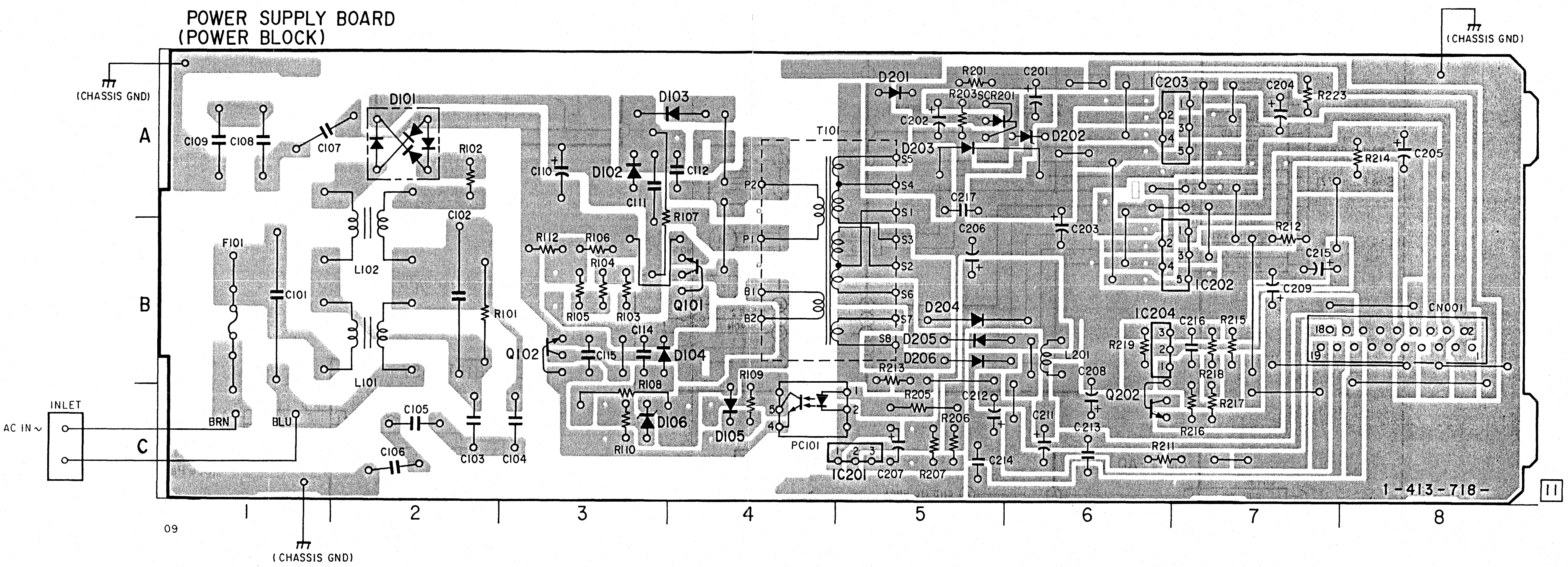

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15
A B C D E F G H I J
MD BLOCK
BASE PWB ASSY
CN-A
T SENS 1
T REEL 2
SW 5V 3
END LED 4
DEW 5
LOAD (-) 6
LOAD (+) 7
GND(UNSW) 8
MODE 1 9
MODE 2 10
GND(UNSW) 11
MODE 3 12
MODE 4 13
TO MA-119 BOARD CN404
(See Page 77)
5.6k
220
0.001
START SENSOR
DEW SENSOR
1 LD MOTOR (-)
2 LD MOTOR (+)
M903 LOADING MOTOR
M
MODE 1
MODE 2
COMMON
MODE 3
MODE 4
MODE SWITCH
T SENSOR PWB ASSY
T REEL SENSOR
PHOTO DIODE
FL PWB(B) ASSY
C IN SW
C OUT SW
CN-D
1 C OUT
2 C START
3 C IN
4 GND(UNSW)
TO MA119 BOARD CN402
(See Page 77)
CM LEAD ASSY
CN-B
GND SW 1
C VS 2
LIMIT 3
SW 5V 4
MTR 12V 5
MTR GND 6
CAP RVS 7
FG 8
REF 9
TO MA-119 BOARD CN401
(See Page 77)
M902 CAPSTAN MOTOR
GND (IC GND)
CONTROL
I-LIMIT
Vcc (5V)
VCO(MOTOR +B)
GND(MOTOR GND)
F/R (L=CW/H=CCW)
FG OUT
REFFRENCE
M
DM PWB ASSY
CN-C
S SENS 1
S REEL 2
REC SAF 3
GND(MTR) 4
MTR 12V 5
D VS 6
D FG 7
NC 8
D PG 9
NC 10
TO MA-119 BOARD CN403
(See Page 77)
620
0.001
END SENSOR
0.001
M901 DRUM MOTOR
GND (MOTOR)
Vcc
CONTROL
FG
PG
M
S SENSOR PWB ASSY
REC SAFTY SW
S REEL SENSOR
09

## POWER SUPPLY (PS/ME Model) PRINTED WIRING BOARD

— Ref. No. POWER SUPPLY: 6000 series —

POWER SUPPLY

| | |
|---|---|
| D101 | A-2 |
| D102 | A-3 |
| D103 | A-4 |
| D104 | B-3 |
| D105 | C-3 |
| D106 | B-3 |
| D107 | B-3 |
| D108 | B-3 |
| D109 | C-3 |
| D110 | B-4 |
| D201 | A-5 |
| D202 | A-6 |
| D203 | A-5 |
| D204 | B-5 |
| D205 | B-5 |
| D206 | B-5 |
| IC201 | C-5 |
| IC202 | B-7 |
| IC203 | A-7 |
| IC204 | B-6 |
| PC101 | C-4 |
| SCR201 | A-5 |
| Q101 | B-4 |
| Q102 | C-3 |
| Q201 | B-6 |
| Q202 | C-6 |


POWER SUPPLY BOARD
(POWER BLOCK)
(CHASSIS GND)
(CHASSIS GND)
(CHASSIS GND)
A
B
C
1
2
3
4
5
6
7
8
09
INLET
AC IN ~
BRN
BLU
F101
C101
C108
C109
C107
D101
R102
L102
L101
C102
R101
C105
C106
C103
C104
C110
D102
C111
C112
D103
R107
R112
R106
R104
R105
R103
Q101
Q102
C115
C114
D104
R108
D106
R110
R109
D105
PC101
T101
P2
P1
B1
B2
S5
S4
S1
S3
S2
S6
S7
S8
D201
R201
R203
SCR201
C201
C202
D203
D202
C217
C206
C203
IC203
C204
R223
R214
C205
R212
C215
IC202
C209
CN001
D204
D205
D206
IC204
C216
R215
R219
R218
R217
Q202
R216
L201
C208
R213
R205
R206
C212
C211
C213
R211
IC201
C207
R207
C214
1-413-718-
11

### ( DIODE )

| | | | |
|---|---|---|---|
| ⚠D101 | 8-719-510-06 | DIODE | S1WB60 |
| ⚠D102 | 8-902-095-01 | DIODE | ERA15-06 |
| ⚠D103 | 9-902-489-01 | DIODE | EG01C |
| D104 | 9-900-535-01 | DIODE | AU02Z |
| D105 | 9-900-535-01 | DIODE | AU02Z |
| D106 | 8-719-175-88 | DIODE | RD7.5F-B3 |
| D107 | 9-902-552-01 | DIODE | MA165 |
| D108 | 8-719-109-63 | DIODE | RD3.0ES-B2 |
| ⚠D201 | 9-900-535-01 | DIODE | AU02Z |
| D202 | 8-719-114-88 | DIODE | RD18JS-B3 |
| ⚠D203 | 8-719-230-02 | DIODE | 30DF2 |
| ⚠D204 | 8-719-982-04 | DIODE | ERB81-004 |
| ⚠D205 | 9-900-535-01 | DIODE | AU02Z |
| ⚠D206 | 9-900-535-01 | DIODE | AU02Z |

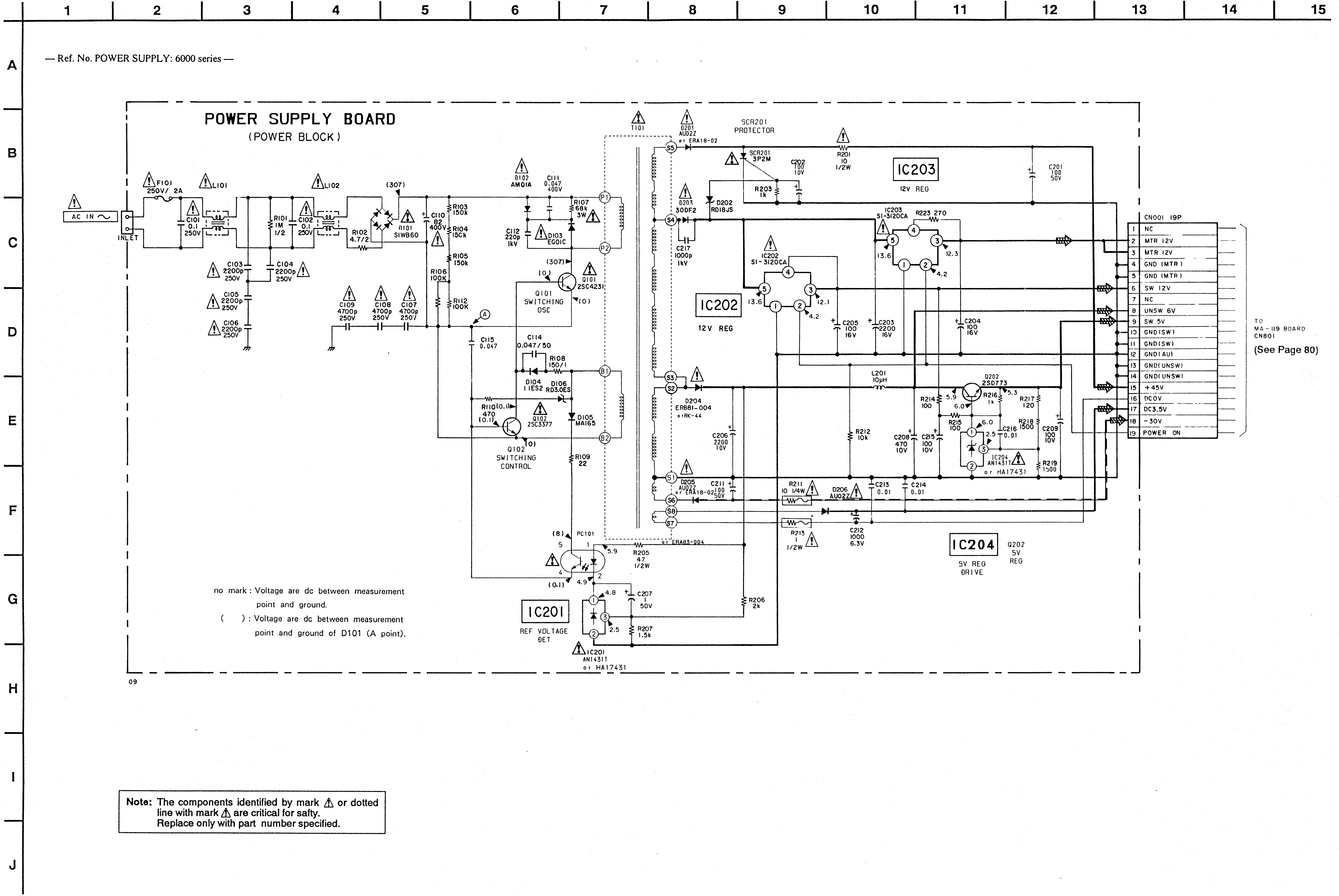
### ( IC )

| | | | |
|---|---|---|---|
| ⚠IC201 | 8-759-420-19 | IC | AN1431T |
| ⚠IC202 | 8-749-921-99 | IC | SI-3120CA |
| ⚠IC203 | 8-749-921-99 | IC | SI-3120CA |
| ⚠IC204 | 8-759-420-19 | IC | AN1431T |

### ( TRANSISTOR )

| | | | |
|---|---|---|---|
| ⚠Q101 | 9-902-496-11 | TRANSISTOR | 2SC4300 |
| ⚠Q102 | 9-900-519-01 | TRANSISTOR | 2SC3377 |
| Q202 | 8-729-140-98 | TRANSISTOR | 2SD773-5 |

— Ref. No. POWER SUPPLY: 6000 series —


1
2
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12
13
14
15
A
B
C
D
E
F
G
H
I
J
POWER SUPPLY BOARD
(POWER BLOCK)
AC IN
INLET
F101 250V/ 2A
L101
L102
C101 0.1 250V
R101 1M 1/2
C102 0.1 250V
R102 4.7/2
D101 S1WB60
C103 2200p 250V
C104 2200p 250V
C105 2200p 250V
C106 2200p 250V
C109 4700p 250V
C108 4700p 250V
C107 4700p 250V
C110 82 400V
R103 150k
R104 150k
R105 150k
R106 100k
R112 100K
D102 AM01A
C111 0.047 400V
C112 220p 1kV
D103 EG01C
R107 68k 3W
Q101 2SC4231
Q101 SWITCHING OSC
C115 0.047
C114 0.047/50
R108 150/1
D104 11ES2
D106 RD3.0ES
R110 470
Q102 2SC3377
Q102 SWITCHING CONTROL
D105 MA165
R109 22
T101
PC101
IC201 REF VOLTAGE DET
IC201 AN1431T or HA17431
C207 1 50V
R207 1.5k
R205 47 1/2W
R206 2k
D201 AU02Z or ERA18-02
SCR201 PROTECTOR
SCR201 3P2M
C202 100 10V
R201 10 1/2W
R203 1k
D203 30DF2
D202 RD18JS
C217 1000p 1kV
IC203 12V REG
C201 100 50V
IC203 SI-3120CA
R223 270
IC202 SI-3120CA
IC202 12V REG
C205 100 16V
C203 2200 16V
C204 100 16V
D204 ERB81-004 or RK-44
C206 2200 10V
L201 10μH
R212 10k
Q202 2SD773
R214 100
R216 1k
R217 120
R215 100
R218 1500
C216 0.01
C209 100 10V
C208 470 10V
C215 100 10V
IC204 AN1431T or HA17431
R219 1500
D205 AU02Z or ERA18-02
C211 100 50V
R211 10 1/4W
D206 AU02Z
C213 0.01
C214 0.01
C212 1000 6.3V
R213 1 1/2W
IC204 5V REG DRIVE
Q202 5V REG
CN001 19P
1 NC
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 NC
8 UNSW 6V
9 SW 5V
10 GND(SW)
11 GND(SW)
12 GND(AU)
13 GND(UNSW)
14 GND(UNSW)
15 +45V
16 DCOV
17 DC3.5V
18 -30V
19 POWER ON
TO MA-119 BOARD CN801
(See Page 80)
09

no mark : Voltage are dc between measurement point and ground.

( ) : Voltage are dc between measurement point and ground of D101 (A point).

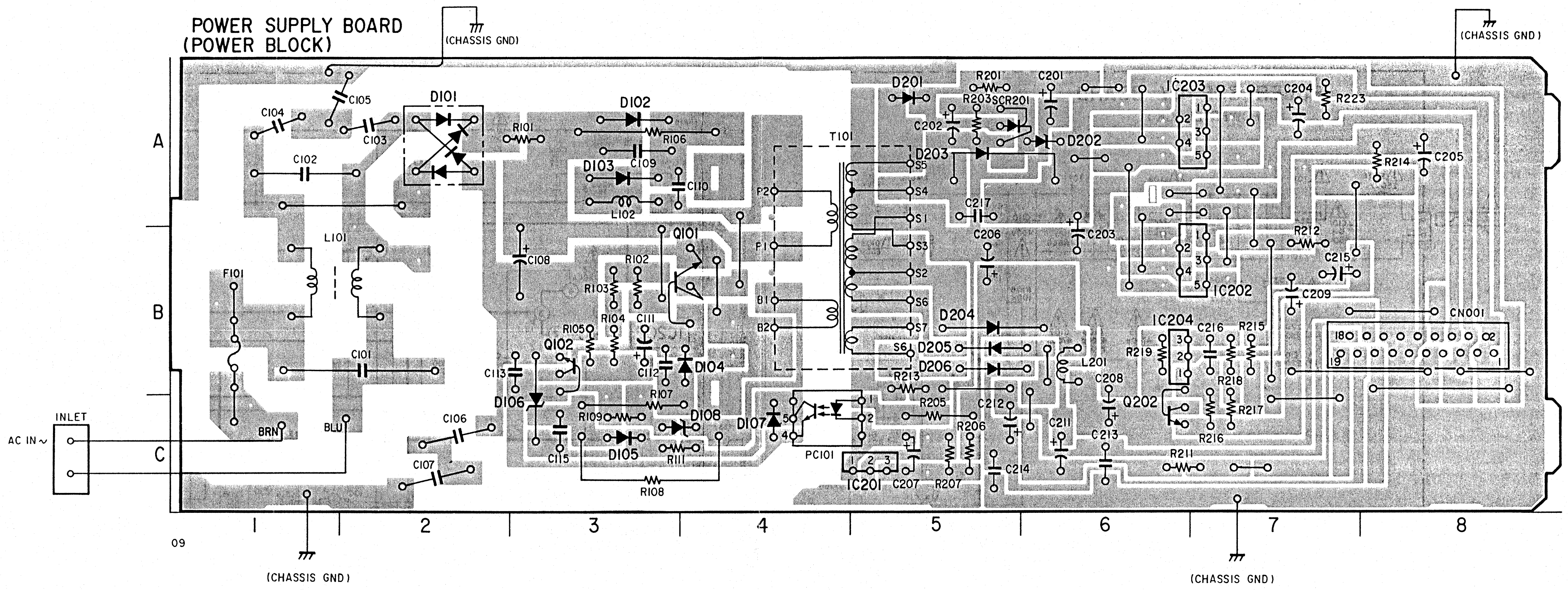
**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.

## POWER SUPPLY (EE Model) PRINTED WIRING BOARD

— Ref. No. POWER SUPPLY: 7000 series —

POWER SUPPLY

| | |
|---|---|
| D101 | A-2 |
| D102 | A-3 |
| D103 | A-3 |
| D104 | B-4 |
| D105 | C-3 |
| D106 | C-3 |
| D107 | C-4 |
| D108 | C-4 |
| D201 | A-5 |
| D202 | A-6 |
| D203 | A-5 |
| D204 | B-5 |
| D205 | B-5 |
| D206 | B-5 |
| IC201 | C-5 |
| IC202 | B-7 |
| IC203 | A-7 |
| IC204 | B-6 |
| PC101 | C-4 |
| SCR201 | A-5 |
| Q101 | B-4 |
| Q102 | B-3 |
| Q202 | C-6 |


POWER SUPPLY BOARD
(POWER BLOCK)
(CHASSIS GND)
(CHASSIS GND)
(CHASSIS GND)
(CHASSIS GND)
A
B
C
1
2
3
4
5
6
7
8
09
INLET
AC IN ~
BRN
BLU
F101
L101
C101
C102
C103
C104
C105
C106
C107
C108
C109
C110
C111
C112
C113
C115
D101
D102
D103
D104
D105
D106
D107
D108
L102
Q101
Q102
R101
R102
R103
R104
R105
R106
R107
R108
R109
R111
PC101
T101
P2
P1
B1
B2
S1
S2
S3
S4
S5
S6
S7
D201
D202
D203
D204
D205
D206
R201
R203
SCR201
C201
C202
C203
C204
C205
C206
C207
C208
C209
C211
C212
C213
C214
C215
C216
C217
R205
R206
R207
R211
R212
R213
R214
R215
R216
R217
R218
R219
R223
IC201
IC202
IC203
IC204
L201
Q202
CN001
18
19
2
1

〈 DIODE 〉

| | | | |
|---|---|---|---|
| ⚠D101 | 8-719-510-06 | DIODE | S1WB60 |
| ⚠D102 | 9-902-094-01 | DIODE | AM01A |
| D103 | 9-902-489-01 | DIODE | EG01C |
| D104 | 8-719-200-82 | DIODE | 11ES2 |
| D105 | 9-902-552-01 | DIODE | MA165 |
| D106 | 8-719-109-63 | DIODE | RD3.0ES-B2 |
| ⚠D201 | 9-900-535-01 | DIODE | AU02Z |
| D202 | 8-719-114-87 | DIODE | RD18JS-B2 |
| ⚠D203 | 8-719-230-02 | DIODE | 30DF2 |
| ⚠D204 | 8-719-982-04 | DIODE | ERB81-004 |
| ⚠D205 | 9-900-535-01 | DIODE | AU02Z |
| ⚠D206 | 9-900-535-01 | DIODE | AU02Z |

〈 IC 〉

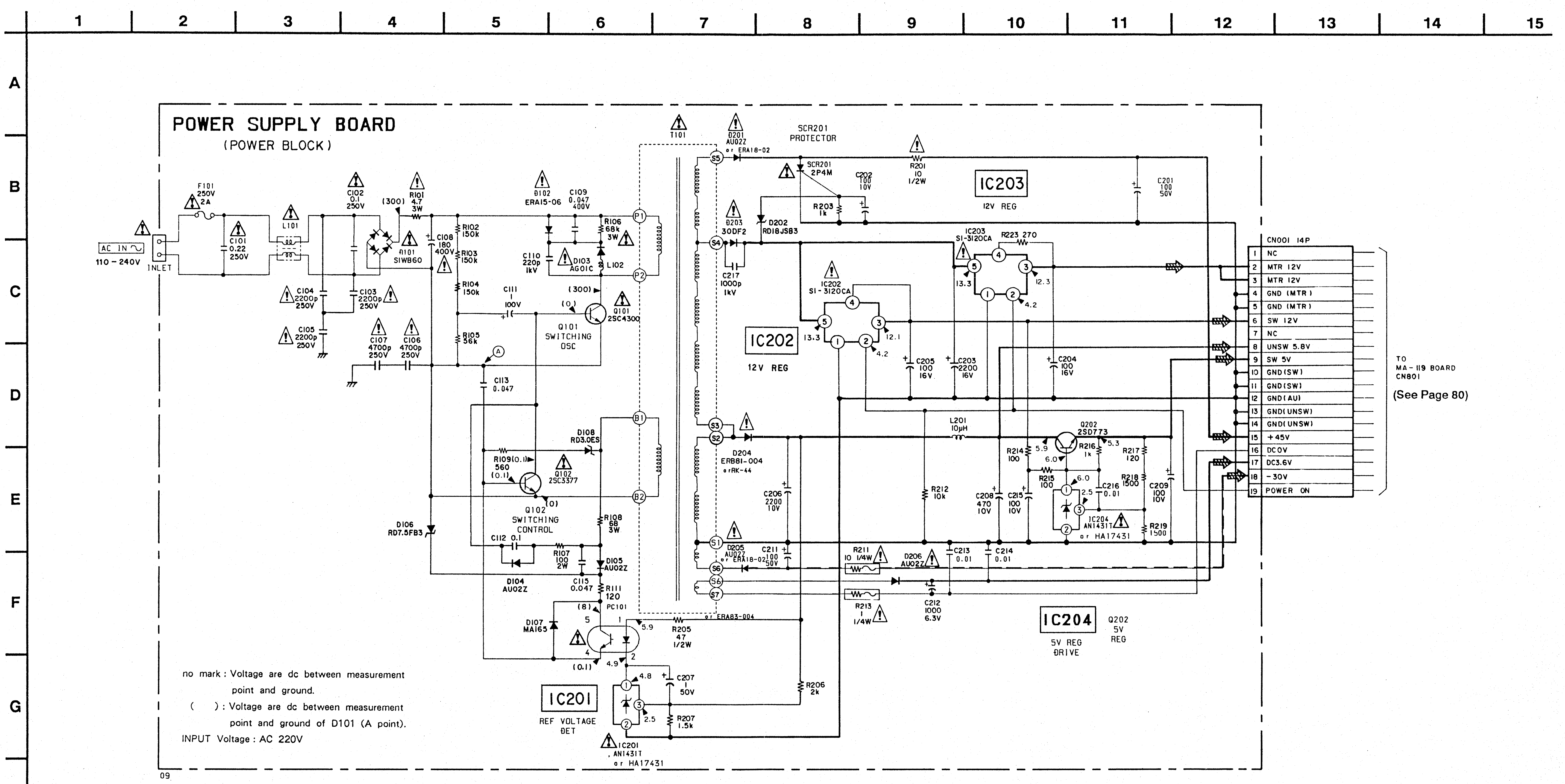
| | | | |
|---|---|---|---|
| ⚠IC201 | 8-759-420-19 | IC | AN1431T |
| ⚠IC202 | 8-749-921-99 | IC | SI-3120CA |
| ⚠IC203 | 8-749-921-99 | IC | SI-3120CA |
| ⚠IC204 | 8-759-420-19 | IC | AN1431T |

〈 TRANSISTOR 〉

| | | | |
|---|---|---|---|
| ⚠Q101 | 9-902-497-11 | TRANSISTOR | 2SC4231 |
| ⚠Q102 | 9-900-517-01 | TRANSISTOR | 2SC3377 |
| Q202 | 8-729-140-98 | TRANSISTOR | 2SD773-5 |

## POWER SUPPLY (EE Model) SCHEMATIC DIAGRAM

— Ref. No. POWER SUPPLY: 7000 series —


1
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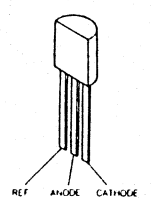
13
14
15
A
B
C
D
E
F
G
H
I
POWER SUPPLY BOARD
(POWER BLOCK)
AC IN
110 - 240V
INLET
F101 250V 2A
L101
C101 0.22 250V
C102 0.1 250V
C104 2200p 250V
C103 2200p 250V
C105 2200p 250V
C107 4700p 250V
C106 4700p 250V
R101 4.7 3W
(300)
D101 S1WB60
C108 180 400V
R102 150k
R103 150k
R104 150k
R105 56k
C111 1 100V
D102 ERA15-06
C109 0.047 400V
C110 220p 1kV
D103 AG01C
R106 68k 3W
L102
Q101 2SC4300
Q101 SWITCHING OSC
(300)
(0)
C113 0.047
A
T101
P1
P2
B1
B2
D108 RD3.0ES
R109 (0.1) 560
(0.1)
Q102 2SC3377
Q102 SWITCHING CONTROL
(0)
C112 0.1
R107 100 2W
D104 AU02Z
R108 68 3W
D105 AU02Z
D106 RD7.5FB3
C115 0.047
R111 120
PC101
(8)
5
1
4
2
5.9
4.9
(0.1)
D107 MA165
IC201
REF VOLTAGE DET
IC201 AN1431T or HA17431
4.8
2.5
C207 1 50V
R207 1.5k
R205 47 1/2W
R206 2k
D201 AU02Z or ERA18-02
SCR201 PROTECTOR
SCR201 2P4M
C202 100 10V
R201 10 1/2W
R203 1k
D203 30DF2
D202 RD18JSB3
C217 1000p 1kV
IC203
12V REG
C201 100 50V
IC203 SI-3120CA
R223 270
13.3
12.3
4.2
IC202 SI-3120CA
IC202
12V REG
13.3
12.1
4.2
C205 100 16V
C203 2200 16V
C204 100 16V
S1
S2
S3
S4
S5
S6
S7
D204 ERB81-004 or RK-44
C206 2200 10V
D205 AU02Z or ERA18-02
C211 100 50V
ERA83-004
L201 10μH
Q202 2SD773
R212 10k
R214 100
5.9
6.0
R216 1k
5.3
R217 120
R215 100
6.0
2.5
C216 0.01
R218 1500
C208 470 10V
C215 100 10V
C209 100 10V
IC204 AN1431T or HA17431
R219 1500
R211 10 1/4W
D206 AU02Z
C213 0.01
C214 0.01
C212 1000 6.3V
R213 1 1/4W
IC204
5V REG DRIVE
Q202 5V REG
CN001 14P
1 NC
2 MTR 12V
3 MTR 12V
4 GND (MTR)
5 GND (MTR)
6 SW 12V
7 NC
8 UNSW 5.8V
9 SW 5V
10 GND(SW)
11 GND(SW)
12 GND(AU)
13 GND(UNSW)
14 GND(UNSW)
15 +45V
16 DC0V
17 DC3.6V
18 -30V
19 POWER ON
TO MA-119 BOARD CN801
(See Page 80)
09

no mark : Voltage are dc between measurement point and ground.
(    ) : Voltage are dc between measurement point and ground of D101 (A point).
INPUT Voltage : AC 220V

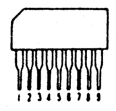
**Note:** The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safty. Replace only with part number specified.

## 4-3. SEMICONDUCTORS

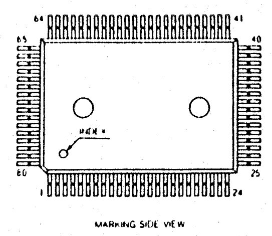
**AN1431T**


REF
ANODE
CATHODE

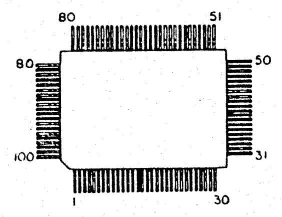
**BA7021**



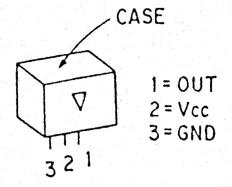
**CXP50116-281Q**


MARKING SIDE VIEW

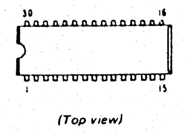
**CXP80724-037Q**


80
51
50
31
100
1
30

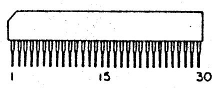
**GP1U58X**


CASE
1=OUT
2=Vcc
3=GND
3 2 1

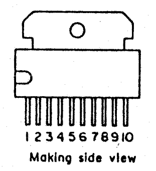
**HA118162NT**


30
16
1
15
(Top view)

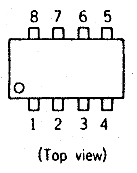
**LA7297**



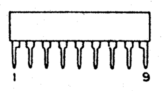
**LB1641**


1 2 3 4 5 6 7 8 9 10
Making side view

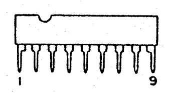
**LC8991**
**RC4556D**
**TL082CP**


8 7 6 5
1 2 3 4
(Top view)

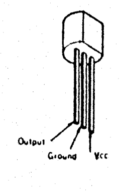
**LVA-519S**



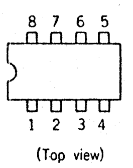
**LVA-521S**



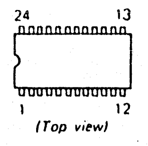
**PST572C**
**PST572H**


Output
Ground
Vcc

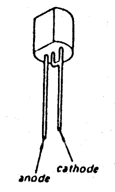
**ST93C46AB1**
**µPC358C**


8 7 6 5
1 2 3 4
(Top view)

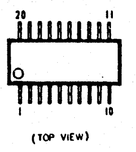
**TA8823N**


24
13
1
12
(Top view)

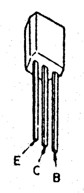
**µPC574J**


anode
cathode

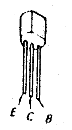
**µPD6450GT-606**


20
11
1
10
(TOP VIEW)

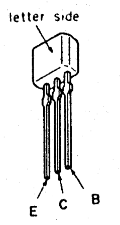
**2SA1309A-R**
**2SC3311A-R**
**DTC144ES**



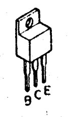
**2SA733-K**
**2SA933-Q**
**2SC3377**
**2SD773-34**



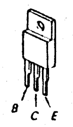
**2SC2785-HFE**


letter side
E C B

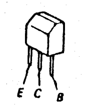
**2SC3890**



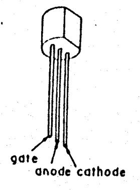
**2SD2012**



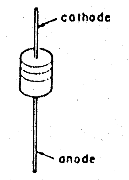
**2SD774-34**



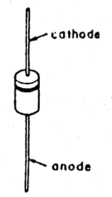
**03P2M**


gate
anode
cathode

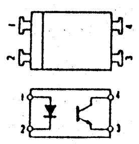
**1SS119**
**11ES2**
**AU02Z**
**ERA15-06**
**MA165**
**RD18JS-BB**
**RD6.2ESB2**
**RD8.2ESB1**


cathode
anode

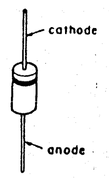
**30DF2**
**AG01A**
**ERB81-004**


cathode
anode

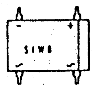
**PC817**



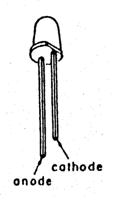
**RD5.1EL2**


cathode
anode

**S1WB60**



**SEL2510C-D**

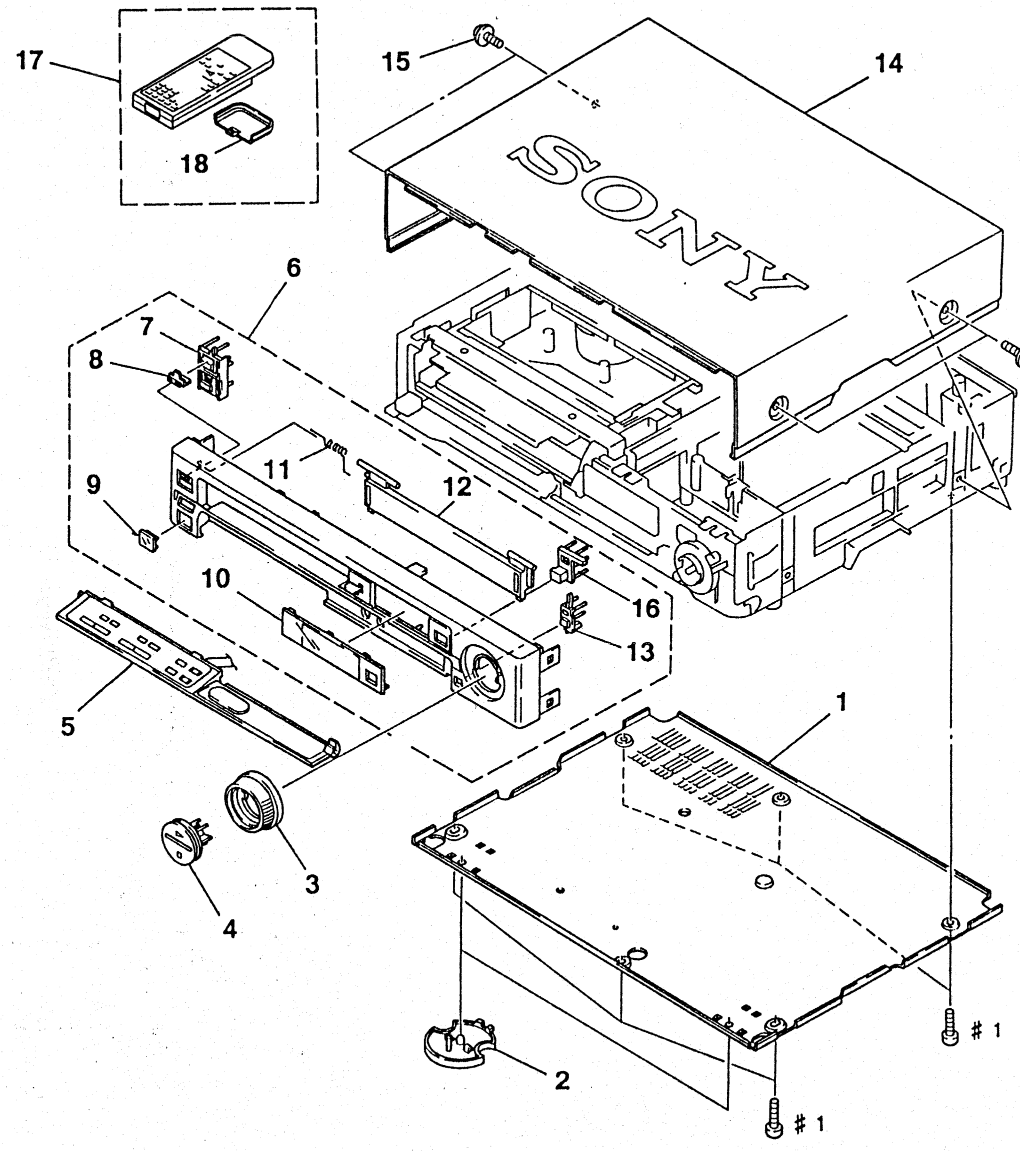

cathode
anode

# SECTION 5
# EXPLODED VIEWS

NOTE:
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.
- East European model is abbreviated as EE, and also E model is PS.

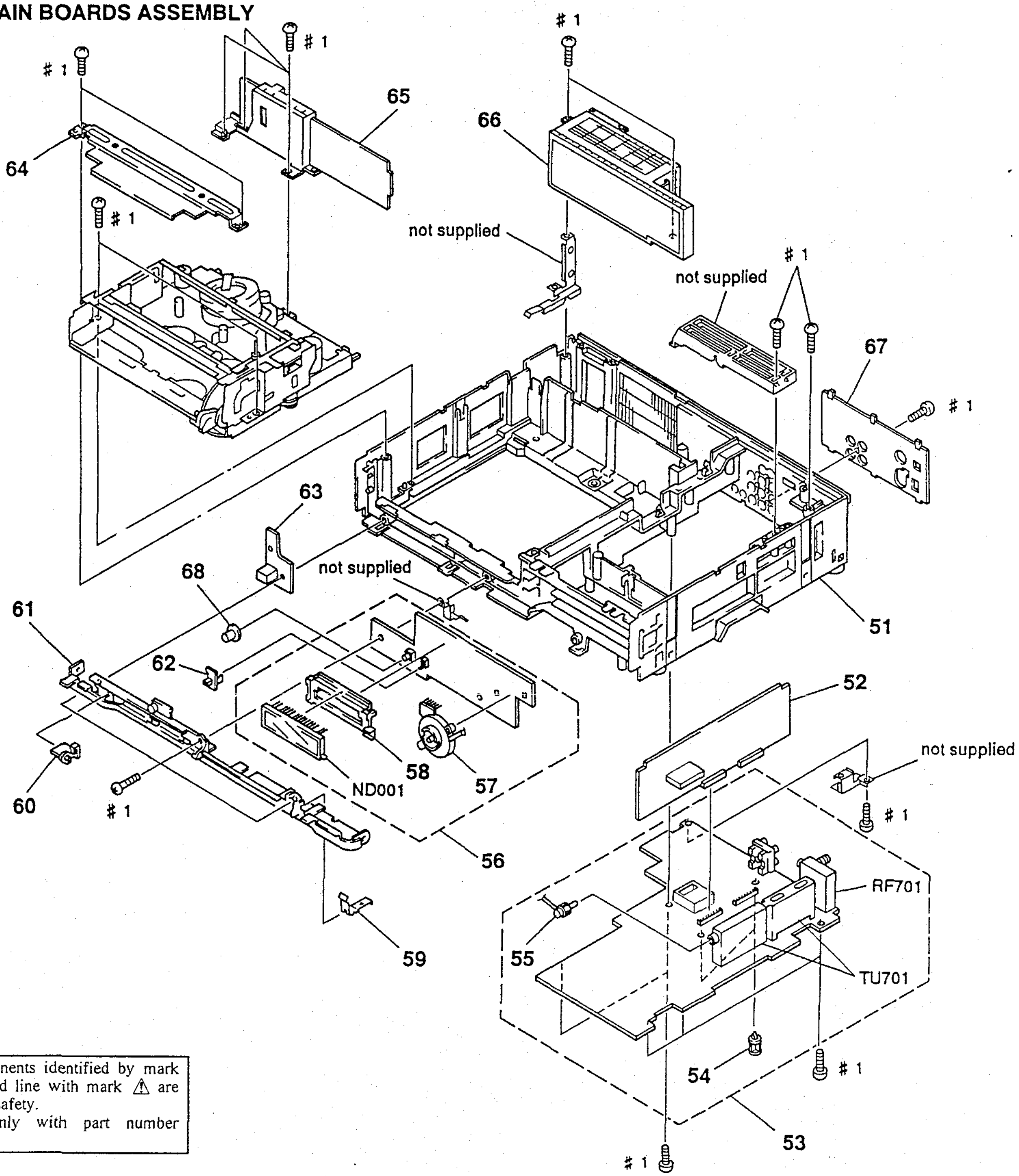
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

## 5-1. FRONT PANEL AND CABINET ASSEMBLIES


17
18
15
14
15
6
7
8
9
11
12
10
16
13
5
1
3
4
2
# 1
# 1

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 1 | 3-946-615-01 | PLATE, BOTTOM | |
| 2 | 3-946-783-01 | INSULATOR (DIA. 58X5) | |
| 3 | 3-944-572-11 | RING, SHUTTLE | |
| 4 | X-3941-388-1 | BUTTON ASSY, FUNCTION | |
| 5 | 1-466-692-31 | SWITCH BLOCK, CONTROL (EXCEPT EE MODEL) | |
| 5 | 1-466-692-51 | SWITCH BLOCK, CONTROL (EE MODEL) | |
| 6 | X-3941-432-1 | PANEL ASSY, FRONT (EXCEPT EE MODEL) | |
| 6 | X-3941-543-1 | PANEL ASSY, FRONT (EE MODEL) | |
| 7 | 3-946-612-01 | BUTTON, POWER-EJECT | |
| 8 | 3-946-611-01 | TIP, POWER BUTTON | |
| 9 | 3-946-620-01 | FILTER, REMOTE CONTROL | |
| 10 | 3-947-038-01 | PLATE, TRANSPARENT | |
| 11 | 3-946-614-01 | SPRING, FL | |
| 12 | 3-946-613-01 | DOOR, CASSETTE | |
| 13 | 3-946-616-01 | BUTTON, PAUSE | |
| 14 | 3-946-622-01 | COVER, UPPER | |
| 15 | 3-710-901-11 | SCREW, TAPPING | |
| 16 | 3-947-039-01 | BUTTON, ENCORE | |
| 17 | 1-693-142-21 | REMOTE COMMANDER (RMT-V116A) | |
| 18 | 3-948-734-01 | COVER, BATTERY | |

## 5-2. MAIN BOARDS ASSEMBLY



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RF701
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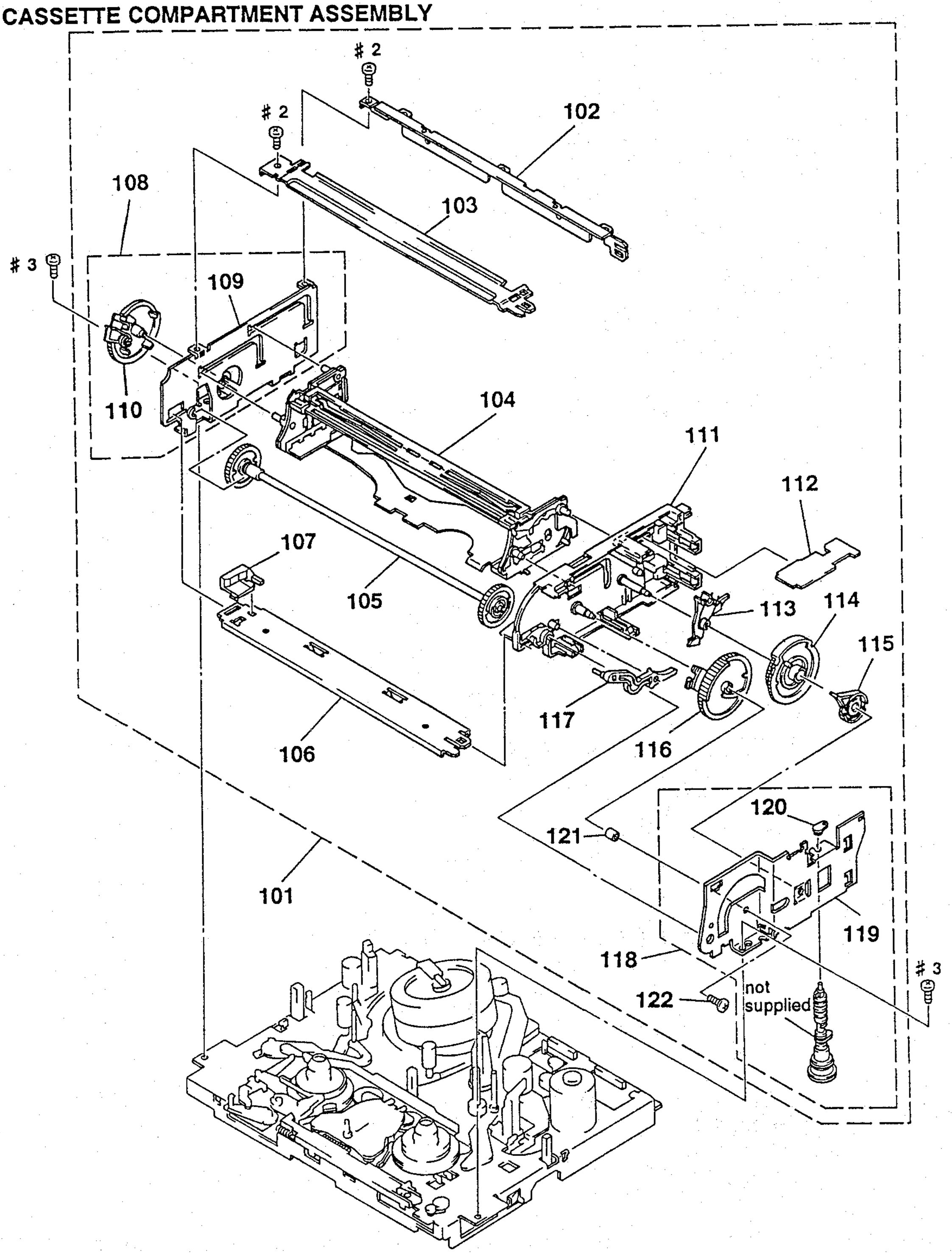
The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 51 | 3-946-628-01 | CHASSIS, D-MOLD | |
| * 52 | A-6727-454-A | YC-120 BOARD, COMPLETE | |
| * 53 | A-6756-664-A | MA-119 BOARD, COMPLETE | |
| 54 | 3-682-057-11 | SPACER (SMALL) | |
| 55 | 1-555-110-00 | CABLE, PIN | |
| * 56 | A-6721-501-A | MF-154 BOARD, COMPLETE | |
| 57 | 1-572-662-11 | SWITCH, ROTARY | |
| * 58 | 3-946-633-02 | HOLDER, FL | |
| 59 | 3-946-637-01 | SPRING, DOOR LOCK | |
| 60 | 3-946-630-01 | PLATE (LEFT), FULCRUM, DOOR | |
| 61 | 3-946-624-02 | ESCUTCHEON, FRAME | |
| 62 | 3-744-217-01 | KNOB, SELECTION | |
| * 63 | A-6756-376-A | MF-155 BOARD, COMPLETE | |
| * 64 | 3-946-636-01 | STAY, FL | |
| * 65 | A-6727-453-A | RP-130 BOARD, COMPLETE | |
| ⚠66 | 1-413-718-12 | POWER BLOCK (EE MODEL) | |
| ⚠66 | 1-413-719-12 | POWER BLOCK (EXCEPT EE MODEL) | |
| * 67 | 3-947-037-31 | PLATE, JACK, REAR (PS MODEL) | |
| * 67 | 3-947-037-41 | PLATE, JACK, REAR (ME MODEL) | |
| * 67 | 3-947-037-81 | PLATE, JACK, REAR (EE MODEL) | |
| 68 | 3-947-815-01 | KNOB, VOLUME | |
| ND001 | 1-519-723-11 | INDICATOR TUBE, FLUORESCENT | |
| ⚠RF701 | 1-466-350-11 | MODULATOR, RF (RFU-2018) | |
| ⚠TU701 | 1-465-898-11 | TUNER, VIF (BTF-3G501) | |

## 5-3. FL CASSETTE COMPARTMENT ASSEMBLY



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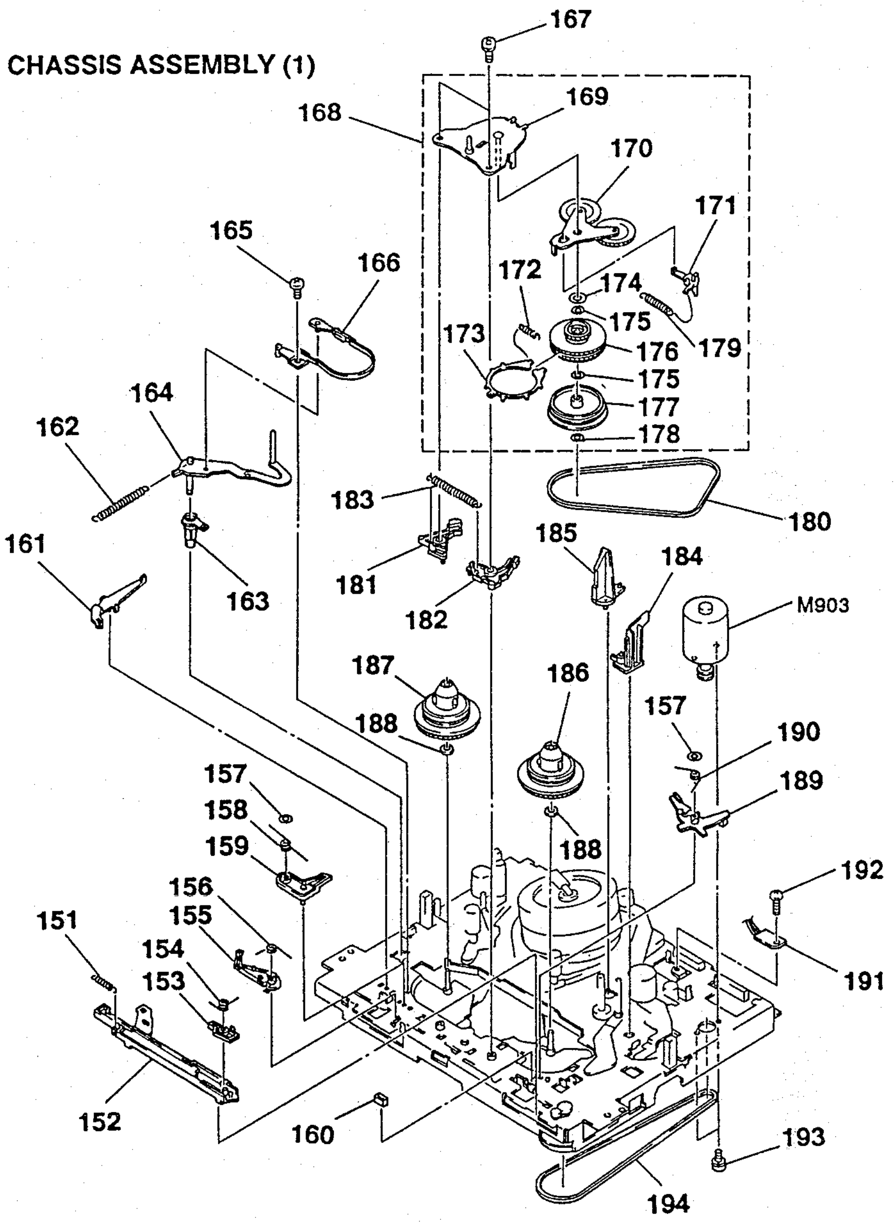
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | 3-946-965-01 | FL ASSY | |
| 102 | 3-947-008-01 | ANGLE, REAR | |
| 103 | 3-946-995-01 | PLATE, UPPER | |
| 104 | 3-946-979-01 | HOLDER ASSY, CASSETTE | |
| 105 | 3-946-983-01 | GEAR ASSY, SYNCHRO | |
| 106 | 3-946-993-01 | ANGLE, FRONT | |
| 107 | 3-946-994-01 | GUIDE (L), CASSETTE | |
| 108 | 3-946-978-01 | FRAME (L) ASSY | |
| 109 | 3-947-009-01 | RIVETING, FRAME (L) | |
| 110 | 3-947-010-01 | GEAR (L) ASSY, LIFT | |
| 111 | 3-947-011-01 | FRAME (R) | |
| 112 | 3-946-992-01 | PWB (B) ASSY, FL | |
| 113 | 3-946-991-01 | LEVER ASSY, SWITCH | |
| 114 | 3-946-980-01 | WHEEL ASSY, WORM | |
| 115 | 3-946-981-01 | ARM ASSY, SWITCH | |
| 116 | 3-946-982-01 | GEAR (R) ASSY, LIFT | |
| 117 | 3-947-012-01 | LEVER ASSY, LIFT | |
| 118 | 3-946-990-01 | COVER ASSY, FRAME | |
| 119 | 3-947-013-01 | COVER, FRAME | |
| 120 | 3-947-020-01 | BEARING (A), F WORM | |
| 121 | 3-948-705-01 | COLLAR | |
| 122 | 3-948-706-01 | SCREW (3X6) | |

## 5-4. MECHANISM CHASSIS ASSEMBLY (1)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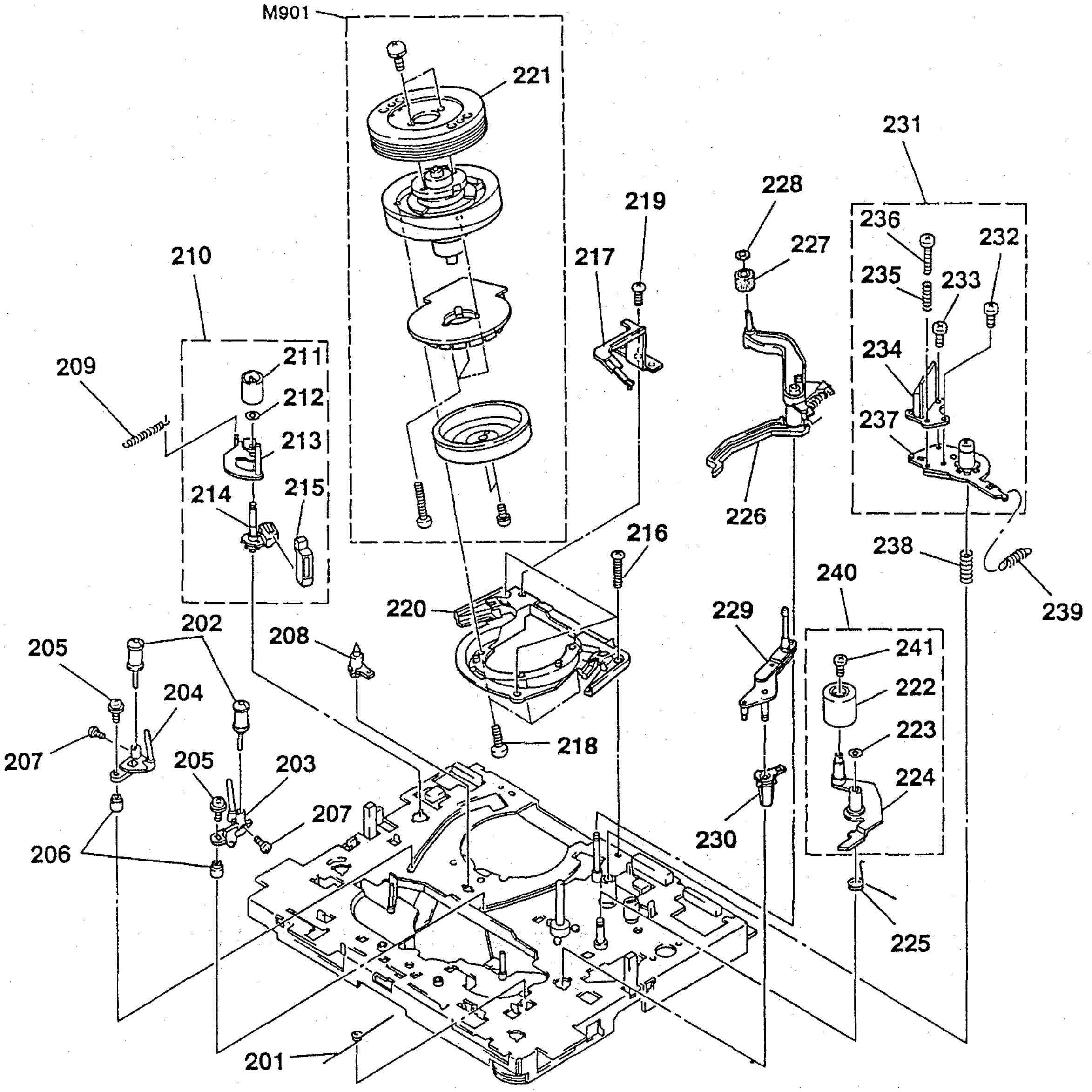
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | 3-947-015-01 | SPRING, BK SLIDE | |
| 152 | 3-947-001-01 | PLATE, SLIDE, BK | |
| 153 | 3-947-014-01 | HOOK, BK TRIGGER | |
| 154 | 3-947-016-01 | SPRING, TRIGGER HOOK | |
| 155 | 3-946-959-01 | ARM, REC | |
| 156 | 3-946-947-01 | SPRING, REC ARM | |
| 157 | 3-946-916-01 | CUT (3X6X0.5), HLW | |
| 158 | 3-946-915-01 | SPRING, SS ARM | |
| 159 | 3-946-914-01 | ARM, SS BRAKE | |
| 160 | 3-947-067-01 | RUBBER, DAMPER | |
| 161 | 3-946-946-01 | ARM, REC SWITCH | |
| 162 | 3-946-937-01 | SPRING, BT | |
| 163 | 3-946-936-01 | METAL, BT ARM | |
| 164 | 3-946-934-01 | ARM ASSY, TENSION | |
| 165 | 3-946-966-01 | SCREW (2.6X5), +C TIGHT | |
| 166 | 3-946-935-01 | BAND ASSY, BT | |
| 167 | 3-947-000-01 | SCREW (2X4), + | |
| 168 | 3-946-969-01 | PLATE ASSY, SUB | |
| 169 | 3-946-971-01 | RIVETING, SUB PLATE | |
| 170 | 3-946-988-01 | PLATE ASSY, GEAR | |
| 171 | 3-946-987-01 | ARM, CENTER RING | |
| 172 | 3-946-986-01 | SPRING, CHANGE RING | |
| 173 | 3-946-985-01 | RING, CHANGE | |
| 174 | 3-946-989-01 | HL (W) (C) (6.4X9X0.3) | |
| 175 | 3-946-997-01 | HL (W) (2.5X4.5X0.25) | |
| 176 | 3-946-970-01 | CLUTCH ASSY | |
| 177 | 3-946-984-01 | PULLEY ASSY, CLUTCH | |
| 178 | 3-946-996-01 | CUT (2.1X5X0.3), P.W. | |
| 179 | 3-947-998-01 | SPRING, CENTER RING ARM | |
| 180 | 3-946-999-01 | BELT, DRIVE | |
| 181 | 3-947-017-01 | ARM (L) ASSY, BRAKE | |
| 182 | 3-947-018-01 | ARM (R) ASSY, BRAKE | |
| 183 | 3-947-019-01 | SPRING, BRAKE ARM | |
| 184 | 3-947-069-01 | GUIDE BLOCK | |
| 185 | 3-947-068-01 | GUIDE ASSY, TAPE | |
| 186 | 3-947-002-01 | TABLE ASSY, T REEL | |
| 187 | 3-947-997-01 | TABLE ASSY, S REEL | |
| 188 | 3-947-003-01 | WASHER (2.5X4.5X0.5) | |
| 189 | 3-946-912-01 | ARM ASSY, TS BRAKE | |
| 190 | 3-946-913-01 | SPRING, TS ARM | |
| 191 | 3-947-626-01 | SENSOR (EYH-S10R) | |
| 192 | 3-947-996-01 | SCREW (1.55X4.5X0.3) | |
| 193 | 3-946-918-01 | SCREW (3X4) | |
| 194 | 3-946-923-01 | BELT, LOADING | |
| M903 | 3-946-917-01 | MOTOR ASSY, L (LOADING) | |

## 5-5. MECHANISM CHASSIS ASSEMBLY (2)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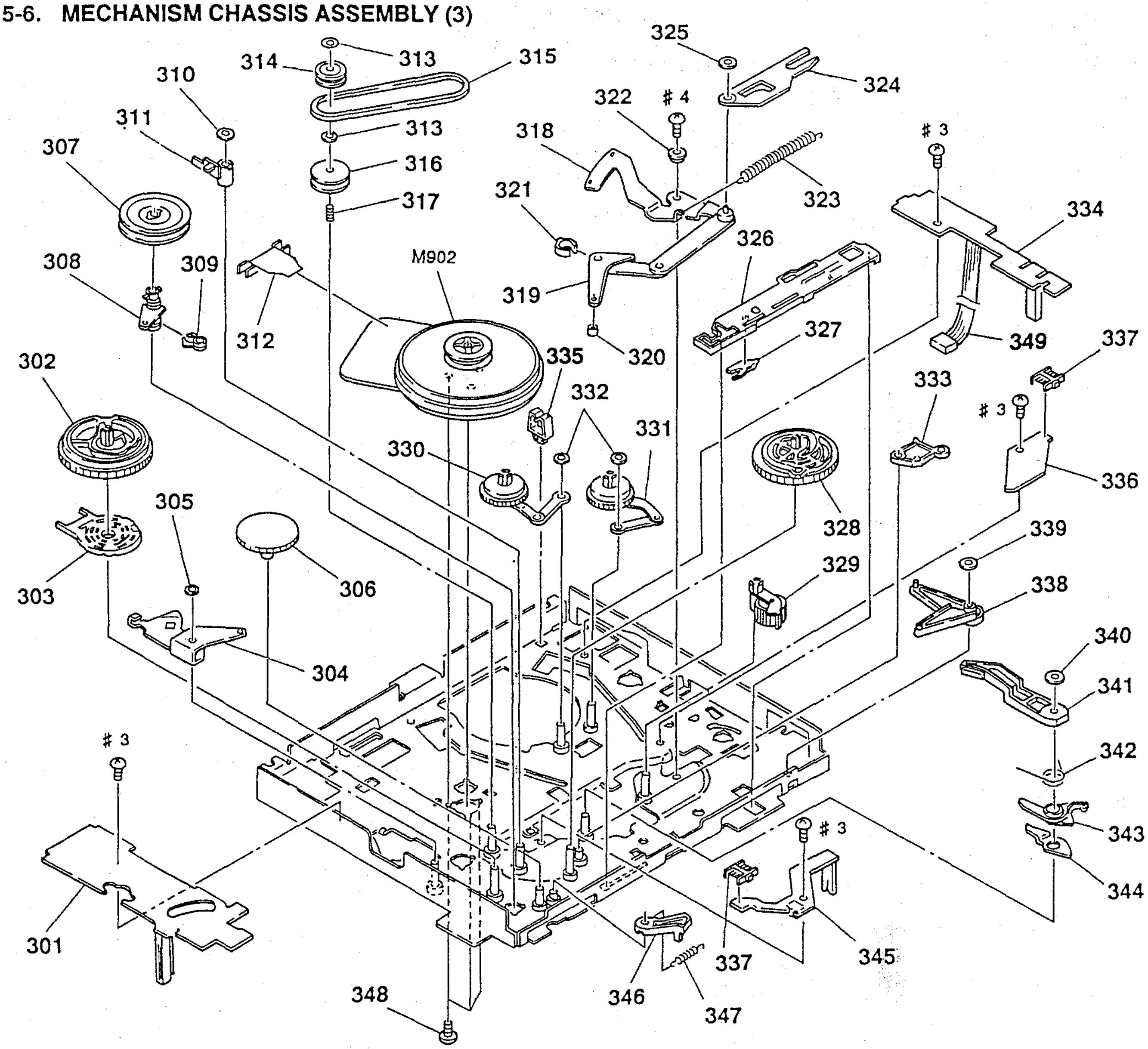
| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | 3-947-022-01 | SPRING, RG ARM | |
| 202 | 3-947-073-01 | POST, ROLLER | |
| 203 | 3-947-072-01 | L BLOCK (R) ASSY | |
| 204 | 3-947-071-01 | L BLOCK (L) ASSY | |
| 205 | 3-947-078-01 | SCREW (2.6X3), + CUP | |
| 206 | 3-947-077-01 | BOSS, LOADING | |
| 207 | 3-947-074-01 | SCREW (2X2.3) | |
| 208 | 3-947-070-01 | BOSS, CASSETTE GUIDE | |
| 209 | 3-948-474-01 | SPRING, F POST | |
| 210 | 3-946-972-01 | FE (BASE) ASSY | |
| 211 | 3-946-975-01 | ROLLER ASSY, IMPEDANCE | |
| 212 | 3-946-977-01 | CUT (1.6X3.8X0.3), W | |
| 213 | 3-946-976-01 | ARM ASSY, F POST | |
| 214 | 3-946-974-01 | HEAD (HVFHG0003), FE | |
| 215 | 3-946-973-01 | HEAD (HV113001), FE | |
| 216 | 3-947-066-01 | SCREW (3X7), +C TIGHT | |
| 217 | 3-949-180-01 | GROUND ASSY, SD | |
| 218 | 3-949-181-01 | SCREW (3X8), + PAN | |
| 219 | 3-949-182-01 | SCREW (2.6X5), +C TIGHT | |
| 220 | 3-949-179-01 | BASE ASSY, CYLINDER | |
| 221 | 8-848-540-01 | DRUM ASSY DZR-21-R | |
| 222 | 3-947-005-01 | PINCH ROLLER | |
| 223 | 3-947-024-01 | HL (C) (3.5X5.5X0.5) | |
| 224 | 3-947-006-01 | RIVETING, P ROLLER ARM | |
| 225 | 3-947-025-01 | SPRING, P ARM | |
| 226 | 3-947-080-01 | LEVER ASSY, CLEANING | |
| 227 | 3-947-624-01 | ROLLER, CLEANING | |
| 228 | 3-947-625-01 | CUT(2.1X5X0.3), POLY-SLIDER(W) | |
| 229 | 3-947-021-01 | ARM ASSY, RG | |
| 230 | 3-946-936-01 | METAL, BT ARM | |
| 231 | 3-947-081-01 | AH (BASE) ASSY | |
| 232 | 3-946-929-01 | SCREW (3X6), PAN | |
| 233 | 3-946-930-01 | SCREW (2.6X7), + PAN | |
| 234 | 3-947-082-01 | HEAD (HVMZA1136), ACE | |
| 235 | 3-947-083-01 | SP, AZIMUTH | |
| 236 | 3-946-928-01 | SCREW, AZIMUTH SP | |
| 237 | 3-946-931-01 | HOLDER ASSY, AH (BASE) | |
| 238 | 3-946-933-01 | SPRING, AH (BASE) | |
| 239 | 3-946-932-01 | SPRING, X ADJ | |
| 240 | 3-947-004-01 | ARM ASSY, P ROLLER | |
| 241 | 3-947-007-01 | SCREW (2.6X4), + BIND | |
| M901 | 8-848-597-11 | DRUM ASSY DZH-48A-R | |

## 5-6. MECHANISM CHASSIS ASSEMBLY (3)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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 301 | 3-946-954-01 | PWB ASSY, BASE | |
| 302 | 3-946-924-01 | GEAR, P CAM | |
| 303 | 3-946-958-01 | SWITCH, MODE | |
| 304 | 3-947-026-01 | PLATE ASSY | |
| 305 | 3-947-027-01 | CUT (3X6X0.5), HLW | |
| 306 | 3-946-922-01 | GEAR, LOADING | |
| 307 | 3-946-921-01 | PULLEY, LOADING | |
| 308 | 3-946-919-01 | METAL ASSY, L PULLEY | |
| 309 | 3-946-920-01 | ARM ASSY, TRG GEAR | |
| 310 | 3-946-964-01 | CUT (2.1X5X0.5) | |
| 311 | 3-946-961-01 | ARM, BREAKER | |
| 312 | 3-947-029-01 | LEAD ASSY, CM | |
| 313 | 3-946-963-01 | CUT (2.1X4X0.4) | |
| 314 | 3-946-950-01 | PULLEY ASSY, RE | |
| 315 | 3-946-962-01 | BELT, FL | |
| 316 | 3-946-951-01 | PULLEY, EJECT | |
| 317 | 3-946-960-01 | SPRING, BREAKER | |
| 318 | 3-946-926-01 | RIVETING, L JOINT PLATE | |
| 319 | 3-946-952-01 | STOPPER, GEAR PLATE | |
| 320 | 3-946-941-01 | ROLLER, CAM | |
| 321 | 3-946-945-01 | STOPPER, L LEVER | |
| 322 | 3-946-940-01 | COLLAR, L GEAR PLATE | |
| 323 | 3-946-927-01 | SPRING, L GR PLATE | |
| 324 | 3-946-939-01 | PLATE, UP, BT PULL | |
| 325 | 3-946-967-01 | CUT (2.1X4X0.5) | |
| 326 | 3-946-943-01 | PLATE, SLIDE, M | |
| 327 | 3-946-944-01 | LEVER | |
| 328 | 3-946-925-01 | GEAR, L CAM | |
| 329 | 3-946-998-01 | ARM ASSY, RF GEAR | |
| 330 | 3-947-075-01 | GEAR (L) ASSY, T THREADING | |
| 331 | 3-947-076-01 | GEAR (R) ASSY, T THREADING | |
| 332 | 3-947-079-01 | HL (C) (4.7X7X0.5) | |
| 333 | 3-946-942-01 | LEVER, M | |
| 334 | 3-949-184-01 | PWB (B) ASSY, DM | |
| 335 | 3-949-185-01 | SADDLE, MINIATURE | |
| 336 | 3-946-956-01 | PWB ASSY, S SENSOR | |
| 337 | 3-946-948-01 | JOINER (MCN40011), PWB | |
| 338 | 3-946-938-01 | LEVER, BT | |
| 339 | 3-946-968-01 | CUT (3X7.5X0.5), HLW | |
| 340 | 3-947-035-01 | CUT (2.6X6X0.5) | |
| 341 | 3-947-033-01 | LEVER, CB RETURN | |
| 342 | 3-947-031-01 | SPRING, C BRAKE | |
| 343 | 3-947-032-01 | LEVER, C BRAKE | |
| 344 | 3-947-030-01 | ARM ASSY, C BRAKE | |
| 345 | 3-946-955-01 | PWB ASSY, T SENSOR | |
| 346 | 3-946-910-01 | ARM, BK RELEASE | |
| 347 | 3-946-911-01 | SPRING, RESET | |
| 348 | 3-947-034-01 | SCREW (2.6X7), + C TIGHT | |
| 349 | 3-949-190-01 | WIRE ASSY, DM | |
| M902 | 3-947-028-01 | MOTOR (F2QKB38)(CAPSTAN) | |

**MA-119**

# SECTION 6
# ELECTRICAL PARTS LIST

NOTE:

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

When indicating parts by reference number, please include the board name.

- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX, -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms
  METAL: Metal-film resistor
  METAL OXIDE: Metal Oxide-film resistor
  F : nonflammable
- Hardware (# mark) list is given in the last of this parts list.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ , for example:
  uA...: μA..., uPA...: μPA...,
  uPB...: μPB..., uPC...: μPC...,
  uPD...: μPD...
- CAPACITORS
  uF : μF
- COILS
  uH : μH

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | A-6756-664-A | MA-119 BOARD, COMPLETE | | | |
| | | *********************** | | | |
| | | (Ref. No 3,000 Series) | | | |
| | 1-555-110-00 | CABLE, PIN | | | |
| | 3-682-057-11 | SPACER (SMALL) | | | |
| | | ( CAPACITOR ) | | | |
| C201 | 1-136-559-11 | FILM | 0.0047uF | 10% | 630V |
| C202 | 1-109-675-11 | MICA | 120PF | 1% | 500V |
| C203 | 1-124-477-11 | ELECT | 47uF | 20% | 25V |
| C204 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C205 | 1-163-011-11 | CERAMIC CHIP | 0.0015uF | 10% | 50V |
| C206 | 1-124-903-11 | ELECT | 1uF | 20% | 50V |
| C209 | 1-124-477-11 | ELECT | 47uF | 20% | 25V |
| C210 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C212 | 1-124-477-11 | ELECT | 47uF | 20% | 25V |
| C213 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C215 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C217 | 1-124-252-00 | ELECT | 0.33uF | 20% | 50V |
| C218 | 1-126-233-11 | ELECT | 22uF | 20% | 50V |
| C219 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C220 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C221 | 1-124-903-11 | ELECT | 1uF | 20% | 50V |
| C222 | 1-124-903-11 | ELECT | 1uF | 20% | 50V |
| C223 | 1-163-024-00 | CERAMIC CHIP | 0.018uF | 10% | 50V |
| C224 | 1-163-002-11 | CERAMIC CHIP | 270PF | 10% | 50V |
| C225 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C226 | 1-126-233-11 | ELECT | 22uF | 20% | 50V |
| C228 | 1-163-024-00 | CERAMIC CHIP | 0.018uF | 10% | 50V |
| C229 | 1-124-927-11 | ELECT | 4.7uF | 20% | 100V |
| C301 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C302 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C303 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V |
| C304 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C305 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C306 | 1-163-239-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C307 | 1-163-227-11 | CERAMIC CHIP | 10PF | 5% | 50V |
| C308 | 1-163-239-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C309 | 1-163-006-11 | CERAMIC CHIP | 560PF | 10% | 50V |
| C310 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C311 | 1-124-903-11 | ELECT | 1uF | 20% | 50V |
| C312 | 1-130-487-00 | MYLAR | 0.022uF | 5% | 50V |
| C313 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C314 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V |
| C317 | 1-163-235-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C318 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C319 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C320 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C321 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C401 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C402 | 1-126-101-11 | ELECT | 100uF | 20% | 16V |
| C403 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C404 | 1-163-033-00 | CERAMIC CHIP | 0.022uF | | 50V |
| C405 | 1-163-033-00 | CERAMIC CHIP | 0.022uF | | 50V |
| C406 | 1-126-101-11 | ELECT | 100uF | 20% | 16V |
| C407 | 1-124-907-11 | ELECT | 10uF | 20% | 50V |
| C410 | 1-126-233-11 | ELECT | 22uF | 20% | 50V |
| C411 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C412 | 1-130-487-00 | MYLAR | 0.022uF | 5% | 50V |
| C413 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C414 | 1-124-925-11 | ELECT | 2.2uF | 20% | 100V |
| C415 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C416 | 1-126-233-11 | ELECT | 22uF | 20% | 50V |
| C417 | 1-124-907-11 | ELECT | 10uF | 20% | 50V |
| C420 | 1-124-907-11 | ELECT | 10uF | 20% | 50V |
| C422 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C423 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C424 | 1-163-833-00 | CERAMIC CHIP | 0.068uF | | 25V |
| C425 | 1-126-233-11 | ELECT | 22uF | 20% | 50V |
| C426 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C427 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C428 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V |
| C429 | 1-164-004-11 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C430 | 1-124-925-11 | ELECT | 2.2uF | 20% | 100V |
| C431 | 1-163-833-00 | CERAMIC CHIP | 0.068uF | | 25V |
| C432 | 1-124-927-11 | ELECT | 4.7uF | 20% | 100V |
| C433 | 1-124-927-11 | ELECT | 4.7uF | 20% | 100V |
| C435 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C437 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C438 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C439 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C440 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C441 | 1-124-925-11 | ELECT | 2.2uF | 20% | 100V |
| C442 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C443 | 1-126-233-11 | ELECT | 22uF | 20% | 50V |
| C444 | 1-126-101-11 | ELECT | 100uF | 20% | 16V |
| C445 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C447 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C448 | 1-126-233-11 | ELECT | 22uF | 20% | 50V | |
| C450 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C501 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C502 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C503 | 1-163-011-11 | CERAMIC CHIP | 0.0015uF | 10% | 50V | |
| C504 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C505 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V | |
| C507 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V | |
| C508 | 1-124-472-11 | ELECT | 470uF | 20% | 10V | |
| C509 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V | |
| C510 | 1-124-443-00 | ELECT | 100uF | 20% | 10V | |
| C701 | 1-124-034-51 | ELECT | 33uF | 20% | 16V | |
| C702 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V | |
| C705 | 1-130-495-00 | MYLAR | 0.1uF | 5% | 50V | |
| C706 | 1-130-495-00 | MYLAR | 0.1uF | 5% | 50V | |
| C707 | 1-130-495-00 | MYLAR | 0.1uF | 5% | 50V | |
| C708 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C709 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C717 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C718 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C720 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C721 | 1-124-034-51 | ELECT | 33uF | 20% | 16V | |
| C722 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V | |
| C723 | 1-124-034-51 | ELECT | 33uF | 20% | 16V | |
| C724 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V | |
| C730 | 1-126-233-11 | ELECT | 22uF | 20% | 50V | |
| C732 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C733 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C734 | 1-163-005-11 | CERAMIC CHIP | 470PF | 10% | 50V | |
| C735 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V | |
| C736 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V | |
| C737 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C738 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C739 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V | |
| C744 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C745 | 1-126-301-11 | ELECT | 1uF | 20% | 50V | |
| C746 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C747 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V | |
| C748 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C749 | 1-163-087-00 | CERAMIC CHIP | 4PF | | 50V | |
| C801 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C802 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C803 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C804 | 1-124-477-11 | ELECT | 47uF | 20% | 25V | |
| C901 | 1-126-233-11 | ELECT | 22uF | 20% | 50V | |
| C902 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C903 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C904 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C905 | 1-124-443-00 | ELECT | 100uF | 20% | 10V | |
| C906 | 1-124-472-11 | ELECT | 470uF | 20% | 10V | |
| C907 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C908 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C915 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C951 | 1-124-925-11 | ELECT | 2.2uF | 20% | 100V | |
| C952 | 1-124-925-11 | ELECT | 2.2uF | 20% | 100V | |
| C953 | 1-124-598-11 | ELECT | 22uF | 20% | 25V | |
| C954 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C955 | 1-124-925-11 | ELECT | 2.2uF | 20% | 100V | |
| C956 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C957 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C958 | 1-163-001-11 | CERAMIC CHIP | 220PF | 10% | 50V | |

( CONNECTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| CN101 | 1-573-846-11 | CONNECTOR, BOARD TO BOARD 14P | |
| CN102 | 1-573-848-11 | CONNECTOR, BOARD TO BOARD 16P | |
| * CN201 | 1-560-892-00 | PIN, CONNECTOR 4P | |
| * CN202 | 1-560-891-00 | PIN, CONNECTOR 3P | |
| * CN203 | 1-560-891-00 | PIN, CONNECTOR 3P | |
| * CN401 | 1-568-786-11 | PIN, CONNECTOR 9P | |
| CN402 | 1-506-469-11 | PIN, CONNECTOR 4P | |
| * CN403 | 1-568-787-11 | PIN, CONNECTOR 10P | |
| * CN404 | 1-573-136-11 | PIN, CONNECTOR 13P | |
| * CN405 | 1-560-891-00 | PIN, CONNECTOR 3P | |
| CN501 | 1-691-611-11 | CONNECTOR, BOARD TO BOARD 22P | |
| CN801 | 1-569-341-11 | CONNECTOR, BOARD TO BOARD 19P | |
| CN803 | 1-569-341-11 | CONNECTOR, BOARD TO BOARD 19P | |
| CNJ001 | 1-568-185-21 | JACK, PIN 4P<br>(VIDEO LINE IN/OUT, AUDIO LINE IN/OUT) | |

( DIODE )

| Ref. No. | Part No. | Description | | Remark |
|---|---|---|---|---|
| D402 | 8-719-101-50 | DIODE | RD5.1E-L2 | |
| D403 | 8-719-911-19 | DIODE | 1SS119 | |
| D501 | 8-719-911-19 | DIODE | 1SS119 | |
| D506 | 8-719-911-19 | DIODE | 1SS119 | |
| D507 | 8-719-200-82 | DIODE | 11ES2 | |
| D701 | 8-759-157-40 | IC | uPC574J | |
| D702 | 8-719-911-19 | DIODE | 1SS119 | |
| D703 | 8-719-911-19 | DIODE | 1SS119 | |
| D704 | 8-719-911-19 | DIODE | 1SS119 | |

( IC )

| Ref. No. | Part No. | Description | | Remark |
|---|---|---|---|---|
| IC201 | 8-759-805-20 | IC | LA7297 | |
| IC301 | 8-759-045-59 | IC | uPD6450GT-606 | |
| IC302 | 8-759-996-03 | IC | LVA519S | |
| ⚠IC401 | 8-759-822-09 | IC | LB1641 | |
| IC402 | 8-759-912-77 | IC | uPC324C | |
| IC403 | 8-759-990-82 | IC | TL082CP | |
| ⚠IC405 | 8-759-246-14 | IC | TA8823N | |
| IC406 | 8-759-981-85 | IC | RC4556D | |
| IC407 | 8-759-135-80 | IC | uPC358C | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

## MA-119

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| IC501 | 8-752-836-19 | IC CXP80724-037Q | |
| IC502 | 8-759-501-99 | IC ST93C46AB1 | |
| IC801 | 8-759-701-59 | IC NJM78M09FA | |
| IC901 | 8-759-927-56 | IC BA7021 | |
| IC951 | 8-759-513-05 | IC LVA521S | |

〈 JUMPER RESISTOR 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| JR101 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR102 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR103 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR104 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR105 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR106 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR107 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR108 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR109 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR110 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR111 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR112 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR113 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR114 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR115 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR116 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR117 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR118 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR209 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR211 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR229 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR230 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR312 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR313 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR314 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR409 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR552 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR725 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR745 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |

〈 COIL 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| L201 | 1-410-120-11 | INDUCTOR 1.2mH | |
| L203 | 1-410-089-11 | INDUCTOR 15mH | |
| L301 | 1-410-513-11 | INDUCTOR 22uH | |
| L302 | 1-412-470-21 | INDUCTOR 22uH | |
| L303 | 1-408-421-00 | INDUCTOR 100uH | |
| L304 | 1-408-421-00 | INDUCTOR 100uH | |
| L305 | 1-410-501-11 | INDUCTOR 2.2uH | |
| L401 | 1-408-413-00 | INDUCTOR 22uH | |
| L402 | 1-408-413-00 | INDUCTOR 22uH | |
| L403 | 1-410-519-11 | INDUCTOR 68uH | |
| L499 | 1-408-421-00 | INDUCTOR 100uH | |
| L502 | 1-408-409-00 | INDUCTOR 10uH | |
| L503 | 1-408-409-00 | INDUCTOR 10uH | |
| L701 | 1-410-521-11 | INDUCTOR 100uH | |
| L702 | 1-410-521-11 | INDUCTOR 100uH | |
| L703 | 1-408-409-00 | INDUCTOR 10uH | |
| L704 | 1-408-409-00 | INDUCTOR 10uH | |
| L705 | 1-410-509-11 | INDUCTOR 10uH | |
| L707 | 1-410-521-11 | INDUCTOR 100uH | |
| L708 | 1-410-521-11 | INDUCTOR 100uH | |
| L901 | 1-410-521-11 | INDUCTOR 100uH | |
| L902 | 1-408-421-00 | INDUCTOR 100uH | |

〈 TRANSISTOR 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| Q103 | 8-729-424-18 | TRANSISTOR UN2113 | |
| Q201 | 8-729-140-96 | TRANSISTOR KSC1008 | |
| Q301 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q302 | 8-729-421-19 | TEANSISTOR UN2213 | |
| Q305 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q307 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q401 | 8-729-423-42 | TRANSISTOR 2SA1309A-R | |
| Q402 | 8-729-424-12 | TRANSISTOR UN2112 | |
| Q404 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q405 | 8-729-421-19 | TRANSISTOR UN2213 | |
| Q406 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q407 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q408 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q409 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q410 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q701 | 8-729-424-08 | TRANSISTOR UN2111 | |
| Q703 | 8-729-424-08 | TRANSISTOR UN2111 | |
| Q705 | 8-729-424-08 | TRANSISTOR UN2111 | |
| Q709 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q710 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q714 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q715 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q717 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q718 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q719 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q720 | 8-729-901-02 | TRANSISTOR DTC124XK | |
| Q721 | 8-729-422-37 | TRANSISTOR 2SB709A-R | |
| Q901 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q902 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |
| Q903 | 8-729-422-28 | TRANSISTOR 2SD601A-R | |

〈 RESISTOR 〉

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R102 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R201 | 1-216-067-00 | METAL CHIP 5.6K 5% 1/10W | |
| R202 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R203 | 1-249-387-11 | CARBON 3.3 5% 1/4W | |
| R204 | 1-216-073-00 | METAL CHIP 10K 5% 1/10W | |
| R205 | 1-249-433-11 | CARBON 22K 5% 1/4W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R207 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R208 | 1-216-001-00 | METAL CHIP | 10 | 5% | 1/10W | |
| R210 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W | |
| R212 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R213 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W | |
| R214 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R215 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R216 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R217 | 1-216-689-11 | METAL CHIP | 39K | 0.5% | 1/10W | |
| R218 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W | |
| R219 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R220 | 1-216-056-00 | METAL GLAZE | 2K | 5% | 1/10W | |
| R222 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R223 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R224 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R225 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R226 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R227 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R301 | 1-216-060-00 | METAL GLAZE | 3K | 5% | 1/10W | |
| R302 | 1-216-056-00 | METAL GLAZE | 2K | 5% | 1/10W | |
| R303 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R304 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R305 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R306 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R307 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R308 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R309 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R310 | 1-216-678-11 | METAL CHIP | 13K | 0.5% | 1/10W | |
| R315 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R316 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R317 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R318 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R319 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R320 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R321 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R322 | 1-216-677-11 | METAL CHIP | 12K | 0.5% | 1/10W | |
| R323 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R350 | 1-216-015-00 | METAL CHIP | 39 | 5% | 1/10W | |
| R351 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R401 | 1-249-412-11 | CARBON | 390 | 5% | 1/4W | |
| R402 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R403 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R404 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R405 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R406 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R407 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R408 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R409 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R410 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R411 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R412 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R413 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R414 | 1-249-427-11 | CARBON | 6.8K | 5% | 1/4W | |
| ⚠R415 | 1-212-950-00 | FUSIBLE | 4.7 | 5% | 1/2W | |
| R416 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R417 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R418 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R419 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R420 | 1-249-410-11 | CARBON | 270 | 5% | 1/4W | |
| R421 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R422 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R423 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R424 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | |
| R425 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R426 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R427 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R429 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R430 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R431 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R432 | 1-247-885-00 | CARBON | 180K | 5% | 1/4W | |
| R433 | 1-249-436-11 | CARBON | 39K | 5% | 1/4W | |
| R434 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R435 | 1-215-437-00 | METAL | 4.7K | 1% | 1/6W | |
| R436 | 1-215-445-00 | METAL | 10K | 1% | 1/6W | |
| R437 | 1-216-671-11 | METAL CHIP | 6.8K | 0.5% | 1/10W | |
| R438 | 1-216-673-11 | METAL CHIP | 8.2K | 0.5% | 1/10W | |
| R439 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R443 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R448 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R449 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R452 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R453 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R454 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R455 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R456 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R457 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R458 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R459 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R460 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R464 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R465 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R466 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W | |
| R467 | 1-216-119-00 | METAL CHIP | 820K | 5% | 1/10W | |
| R468 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R469 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R470 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R471 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R473 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R474 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R475 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

# MA-119

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R476 | 1-216-044-00 | METAL CHIP | 620 | 5% | 1/10W | |
| R477 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R478 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R479 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R480 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R481 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R482 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R483 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R484 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R485 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R486 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R487 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R489 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R490 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R493 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R494 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R501 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R502 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R504 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R507 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R508 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R510 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R514 | 1-216-017-00 | METAL CHIP | 47 | 5% | 1/10W | |
| R516 | 1-249-431-11 | CARBON | 15K | 5% | 1/4W | |
| R517 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R518 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R519 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R520 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R522 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | F |
| R523 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | F |
| R524 | 1-249-421-11 | CARBON | 2.2K | 5% | 1/4W | F |
| R525 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | F |
| R526 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R527 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R550 | 1-249-430-11 | CARBON | 12K | 5% | 1/4W | |
| R551 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R553 | 1-249-435-11 | CARBON | 33K | 5% | 1/4W | |
| R555 | 1-216-689-11 | METAL CHIP | 39K | 0.5% | 1/10W | |
| R701 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R703 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R704 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R706 | 1-249-420-11 | CARBON | 1.8K | 5% | 1/4W | F |
| R707 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R708 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R709 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R710 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R711 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R714 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R728 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R729 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R730 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R731 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R732 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R733 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R734 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R737 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W | |
| R738 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R739 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R740 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R741 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R742 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R743 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R744 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R746 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R747 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R748 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R750 | 1-216-013-00 | METAL CHIP | 33 | 5% | 1/10W | |
| R751 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R752 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R754 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R903 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R904 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R905 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R906 | 1-216-038-00 | METAL CHIP | 360 | 5% | 1/10W | |
| R907 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R908 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R910 | 1-249-408-11 | CARBON | 180 | 5% | 1/4W | F |
| R912 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R913 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W | |
| R914 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R915 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R916 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R917 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R950 | 1-249-435-11 | CARBON | 33K | 5% | 1/4W | |
| R951 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R953 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R954 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R955 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |

( MODULATOR )

| Ref. No. | Part No. | Description |
|---|---|---|
| ⚠RF701 | 1-466-350-11 | MODULATOR, RF (RFU-2018) (VHF/UHF, IN/OUT) |

( VARIABLE RESISTOR )

| Ref. No. | Part No. | Description |
|---|---|---|
| RV201 | 1-238-021-11 | RES, ADJ, CARBON 220K |
| RV501 | 1-241-632-11 | RES, ADJ, CARBON 47K |

( TRANSFORMER )

| Ref. No. | Part No. | Description |
|---|---|---|
| T201 | 1-433-330-11 | TRANSFORMER, BIAS OSCILLATION |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( TUNER ) | |
| ⚠TU701 | 1-465-898-11 | TUNER, VIF (BTF-3G501) | |
| | | ( VIBRATOR ) | |
| X301 | 1-577-289-11 | VIBRATOR, CRYSTAL (17.7MHz) | |
| X501 | 1-578-774-11 | VIBRATOR, CRYSTAL 12MHz) | |
| ************************************************************ | | | |
| * | A-6721-501-A | MF-154 BOARD, COMPLETE<br>*********************** | |
| | | | (Ref. No 4,000 Series) |
| | 1-572-662-11 | SWITCH, ROTARY | |
| * | 3-946-633-02 | HOLDER, FL | |
| | | ( CAPACITOR ) | |
| C001 | 1-126-096-11 | ELECT 10uF 20% 35V | |
| C002 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| C003 | 1-125-486-11 | DOUBLE LAYERS 0.22F 5.5V | |
| C004 | 1-163-102-00 | CERAMIC CHIP 24PF 5% 50V | |
| C005 | 1-163-235-11 | CERAMIC CHIP 22PF 5% 50V | |
| C006 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| C007 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| C009 | 1-128-057-11 | ELECT 330uF 20% 6.3V | |
| C011 | 1-124-589-11 | ELECT 47uF 20% 16V | |
| C012 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| C013 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| C014 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| | | ( CONNECTOR ) | |
| CN001 | 1-568-080-11 | CONNECTOR (RECEPTALE) 22P | |
| CN002 | 1-691-612-11 | SOCKET, CONNECTOR 5P | |
| CN003 | 1-569-264-11 | CONNECTOR, FPC (ZIF TYPE) 8P | |
| CN004 | 1-580-850-11 | CONNECTOR (DMS) 8P | |
| | | ( DIODE ) | |
| D001 | 8-719-911-19 | DIODE 1SS119 | |
| D002 | 8-719-911-19 | DIODE 1SS119 | |
| D003 | 8-719-110-06 | DIODE RD8.2ES-B1 | |
| D004 | 8-719-911-19 | DIODE 1SS119 | |
| D005 | 8-719-911-19 | DIODE 1SS119 | |
| D006 | 8-719-911-19 | DIODE 1SS119 | |
| D007 | 8-719-911-19 | DIODE 1SS119 | |
| D008 | 8-719-911-19 | DIODE 1SS119 | |
| D010 | 8-719-911-19 | DIODE 1SS119 | |
| D011 | 8-719-911-19 | DIODE 1SS119 | |
| D012 | 8-719-911-19 | DIODE 1SS119 | |
| D013 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D014 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D015 | 8-719-109-93 | DIODE RD6.2ES-B2 | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| D016 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D017 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D018 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D019 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D020 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| D021 | 8-719-109-93 | DIODE RD6.2ES-B2 | |
| | | ( IC ) | |
| IC001 | 8-752-836-49 | IC CXP50116-281Q | |
| IC002 | 8-759-515-58 | IC PST572H | |
| IC003 | 8-759-510-43 | IC PST572C | |
| | | ( JUMPER RESISTOR ) | |
| JR001 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR002 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| JR004 | 1-216-295-00 | METAL CHIP 0 5% 1/10W | |
| | | ( COIL ) | |
| L001 | 1-410-521-11 | INDUCTOR 100uH | |
| L002 | 1-410-521-11 | INDUCTOR 100uH | |
| L003 | 1-410-501-11 | INDUCTOR 2.2uH | |
| L004 | 1-410-501-11 | INDUCTOR 2.2uH | |
| | | ( INDICATOR ) | |
| ND001 | 1-519-723-11 | INDICATOR TUBE, FLUORESCENT | |
| | | ( RESISTOR ) | |
| R001 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R002 | 1-216-069-00 | METAL CHIP 6.8K 5% 1/10W | |
| R003 | 1-216-077-00 | METAL CHIP 15K 5% 1/10W | |
| R004 | 1-249-431-11 | CARBON 15K 5% 1/4W | |
| R005 | 1-216-001-00 | METAL CHIP 10 5% 1/10W | |
| R006 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R007 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| R008 | 1-216-113-00 | METAL CHIP 470K 5% 1/10W | |
| R010 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R011 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R012 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R013 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R014 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R015 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R016 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R017 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R018 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R019 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R020 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R021 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R022 | 1-216-081-00 | METAL CHIP 22K 5% 1/10W | |
| R023 | 1-249-413-11 | CARBON 470 5% 1/4W | |
| R024 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| R025 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R026 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R027 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R028 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R029 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R030 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R031 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R054 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R055 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R056 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R057 | 1-216-023-00 | METAL CHIP 82 5% 1/10W | |
| R058 | 1-216-105-00 | METAL CHIP 220K 5% 1/10W | |
| R059 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R060 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R061 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R062 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R063 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R064 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R065 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R066 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R067 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R068 | 1-216-049-00 | METAL CHIP 1K 5% 1/10W | |
| R069 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R070 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R071 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R072 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R073 | 1-216-089-00 | METAL CHIP 47K 5% 1/10W | |
| R076 | 1-216-065-00 | METAL CHIP 4.7K 5% 1/10W | |
| R077 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| | | ( VARIABLE RESISTOR ) | |
| RV001 | 1-241-906-11 | RES, VAR, CARBON 10K (SHARPNESS) | |
| | | ( SWITCH ) | |
| S001 | 1-571-977-11 | SWITCH, TACTIL (REPLAY) | |
| S002 | 1-571-977-11 | SWITCH, TACTIL (PAUSE ▮▮) | |
| S003 | 1-571-977-11 | SWITCH, TACTIL (CL) | |
| S004 | 1-572-908-11 | SWITCH, SLIDE (RENTAL PICTURE) | |
| S006 | 1-570-854-11 | SWITCH, SLIDE (COLOR SYSTEM) | |
| | | ( VIBRATOR ) | |
| X001 | 1-577-101-11 | VIBRATOR, CERAMIC (4.19MHz) | |
| X002 | 1-579-463-11 | VIBRATOR, CRYSTAL (32.768kHz) | |

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* A-6756-376-A MF-155 BOARD, COMPLETE
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(Ref. No 5,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CAPACITOR ) | |
| C051 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| | | ( CONNECTOR ) | |
| CN051 | 1-691-612-11 | SOCKET, CONNECTOR 5P | |
| | | ( DIODE ) | |
| D051 | 8-719-303-02 | DIODE SEL2510C-D | |
| D052 | 8-719-303-02 | DIODE SEL2510C-D | |
| | | ( IC ) | |
| IC051 | 1-466-833-11 | IC GP1U58X | |
| | | ( RESISTOR ) | |
| R051 | 1-216-051-00 | METAL CHIP 1.2K 5% 1/10W | |
| R052 | 1-216-027-00 | METAL CHIP 120 5% 1/10W | |
| R053 | 1-216-027-00 | METAL CHIP 120 5% 1/10W | |
| | | ( SWITCH ) | |
| S051 | 1-571-977-11 | SWITCH, TACTIL (ON STANDBY) | |
| S052 | 1-571-977-11 | SWITCH, TACTIL (EJECT) | |

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* A-6727-453-A RP-130 BOARD, COMPLETE
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(Ref. No 1,000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| | | ( CAPACITOR ) | |
| C801 | 1-161-494-00 | CERAMIC 0.022uF 25V | |
| C802 | 1-161-494-00 | CERAMIC 0.022uF 25V | |
| C803 | 1-161-494-00 | CERAMIC 0.022uF 25V | |
| C804 | 1-164-159-11 | CERAMIC 0.1uF 50V | |
| C805 | 1-161-494-00 | CERAMIC 0.022uF 25V | |
| C806 | 1-162-282-31 | CERAMIC 100PF 10% 50V | |
| C807 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C808 | 1-124-584-00 | ELECT 100uF 20% 10V | |
| C809 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C810 | 1-124-584-00 | ELECT 100uF 20% 10V | |
| C811 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C812 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C813 | 1-124-252-00 | ELECT 0.33uF 20% 50V | |
| C814 | 1-164-159-11 | CERAMIC 0.1uF 50V | |
| C815 | 1-164-159-11 | CERAMIC 0.1uF 50V | |
| C816 | 1-164-159-11 | CERAMIC 0.1uF 50V | |
| C817 | 1-161-375-00 | CERAMIC 0.0022uF 20% 50V | |
| C818 | 1-162-211-31 | CERAMIC 33PF 5% 50V | |
| C819 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C820 | 1-164-064-11 | CERAMIC 56PF 5% 50V | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| C821 | 1-164-066-11 | CERAMIC 68PF 5% 50V | |
| C822 | 1-162-288-31 | CERAMIC 330PF 10% 50V | |
| C823 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C824 | 1-124-126-00 | ELECT 47uF 20% 10V | |
| C826 | 1-124-589-11 | ELECT 47uF 20% 16V | |
| C827 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C828 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C829 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C830 | 1-162-205-31 | CERAMIC 18PF 5% 50V | |
| C831 | 1-162-217-31 | CERAMIC 56PF 5% 50V | |
| C832 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C833 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C835 | 1-162-215-31 | CERAMIC 47PF 5% 50V | |
| C837 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C838 | 1-124-126-00 | ELECT 47uF 20% 10V | |
| C839 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C840 | 1-161-379-00 | CERAMIC 0.01uF 20% 25V | |
| C841 | 1-124-126-00 | ELECT 47uF 20% 10V | |
| C850 | 1-162-282-31 | CERAMIC 100PF 10% 50V | |
| | | ( CONNECTOR ) | |
| CN801 | 1-563-585-11 | CONNECTOR, FLEXIBLE 8P | |
| CN802 | 1-569-338-11 | CONNECTOR, BOARD TO BOARD 19P | |
| * CN803 | 1-564-031-00 | PIN, CONNECTOR 6P | |
| | | ( DIODE ) | |
| D801 | 8-719-911-19 | DIODE 1SS119 | |
| D802 | 8-719-911-19 | DIODE 1SS119 | |
| D803 | 8-719-911-19 | DIODE 1SS119 | |
| D805 | 8-719-911-19 | DIODE 1SS119 | |
| D806 | 8-719-911-19 | DIODE 1SS119 | |
| D807 | 8-719-911-19 | DIODE 1SS119 | |
| D808 | 8-719-911-19 | DIODE 1SS119 | |
| | | ( IC ) | |
| IC801 | 8-759-046-75 | IC HA118162NT | |
| | | ( COIL ) | |
| L801 | 1-410-525-11 | INDUCTOR 220uH | |
| L802 | 1-410-525-11 | INDUCTOR 220uH | |
| L803 | 1-410-521-11 | INDUCTOR 100uH | |
| L804 | 1-410-521-11 | INDUCTOR 100uH | |
| L806 | 1-410-515-11 | INDUCTOR 33uH | |
| L807 | 1-410-516-11 | INDUCTOR 39uH | |
| L808 | 1-410-511-11 | INDUCTOR 15uH | |
| L809 | 1-410-511-11 | INDUCTOR 15uH | |
| L810 | 1-410-524-41 | INDUCTOR 180uH | |
| L811 | 1-410-521-11 | INDUCTOR 100uH | |
| L812 | 1-410-521-11 | INDUCTOR 100uH | |
| L813 | 1-410-509-11 | INDUCTOR 10uH | |
| L814 | 1-410-521-11 | INDUCTOR 100uH | |
| | | ( TRANSISTOR ) | |
| Q801 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q802 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q803 | 8-729-900-65 | TRANSISTOR DTA144ES | |
| Q804 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q805 | 8-729-423-42 | TRANSISTOR 2SA1309A-R | |
| Q806 | 8-729-423-42 | TRANSISTOR 2SA1309A-R | |
| Q807 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q808 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q809 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q810 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q811 | 8-729-173-38 | TRANSISTOR 2SA733-K | |
| Q813 | 8-729-900-65 | TRANSISTOR DTA144ES | |
| Q814 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q815 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q816 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q817 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q818 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| Q819 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q820 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q821 | 8-729-119-78 | TRANSISTOR 2SC2785-HFE | |
| Q822 | 8-729-900-89 | TRANSISTOR DTC144ES | |
| | | ( RESISTOR ) | |
| R801 | 1-249-405-11 | CARBON 100 5% 1/4W | |
| R802 | 1-249-409-11 | CARBON 220 5% 1/4W | |
| R803 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R804 | 1-215-401-11 | METAL 150 1% 1/6W | |
| R805 | 1-215-383-00 | METAL 27 1% 1/6W | |
| R806 | 1-249-405-11 | CARBON 100 5% 1/4W | |
| R807 | 1-249-405-11 | CARBON 100 5% 1/4W | |
| R808 | 1-215-383-00 | METAL 27 1% 1/6W | |
| R809 | 1-215-401-11 | METAL 150 1% 1/6W | |
| R810 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R811 | 1-249-409-11 | CARBON 220 5% 1/4W | |
| R812 | 1-249-405-11 | CARBON 100 5% 1/4W | |
| R813 | 1-249-416-11 | CARBON 820 5% 1/4W | |
| R815 | 1-249-433-11 | CARBON 22K 5% 1/4W | |
| R816 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R817 | 1-249-423-11 | CARBON 3.3K 5% 1/4W | |
| R818 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R819 | 1-249-417-11 | CARBON 1K 5% 1/4W | |
| R820 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R821 | 1-249-421-11 | CARBON 2.2K 5% 1/4W | |
| R822 | 1-249-412-11 | CARBON 390 5% 1/4W | |
| R823 | 1-249-416-11 | CARBON 820 5% 1/4W | |
| R824 | 1-249-412-11 | CARBON 390 5% 1/4W | |
| R825 | 1-249-426-11 | CARBON 5.6K 5% 1/4W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R826 | 1-249-424-11 | CARBON | 3.9K | 5% | 1/4W | |
| R827 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | |
| R828 | 1-249-414-11 | CARBON | 560 | 5% | 1/4W | |
| R830 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R831 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | |
| R832 | 1-249-416-11 | CARBON | 820 | 5% | 1/4W | |
| R833 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R834 | 1-249-426-11 | CARBON | 5.6K | 5% | 1/4W | |
| R835 | 1-249-416-11 | CARBON | 820 | 5% | 1/4W | |
| R836 | 1-249-418-11 | CARBON | 1.2K | 5% | 1/4W | |
| R838 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R839 | 1-249-437-11 | CARBON | 47K | 5% | 1/4W | |
| R841 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R842 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W | |
| R843 | 1-249-410-11 | CARBON | 270 | 5% | 1/4W | |
| R845 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R846 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R847 | 1-249-426-11 | CARBON | 5.6K | 5% | 1/4W | |
| R848 | 1-249-424-11 | CARBON | 3.9K | 5% | 1/4W | |
| R849 | 1-249-415-11 | CARBON | 680 | 5% | 1/4W | |
| R850 | 1-249-414-11 | CARBON | 560 | 5% | 1/4W | |
| R851 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R852 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | |
| R853 | 1-249-429-11 | CARBON | 10K | 5% | 1/4W | |
| R854 | 1-249-413-11 | CARBON | 470 | 5% | 1/4W | |

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* A-6727-454-A YC-120 BOARD, COMPLETE

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(Ref. No 2,000 Series)

( CAPACITOR )

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C001 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C002 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C003 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C004 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C005 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C006 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C007 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C008 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C009 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C010 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C011 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C012 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C013 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C014 | 1-164-005-11 | CERAMIC CHIP | 0.47uF | | 25V | |
| C015 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C017 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C018 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C019 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C020 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C021 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C022 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V | |
| C023 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C024 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V | |
| C027 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V | |
| C028 | 1-163-089-00 | CERAMIC CHIP | 6PF | | 50V | |
| C029 | 1-163-123-00 | CERAMIC CHIP | 180PF | 5% | 50V | |
| C030 | 1-163-107-00 | CERAMIC CHIP | 39PF | 5% | 50V | |
| C031 | 1-163-114-00 | CERAMIC CHIP | 75PF | 5% | 50V | |
| C032 | 1-124-277-11 | ELECT | 4.7uF | 20% | 35V | |
| C033 | 1-163-139-00 | CERAMIC CHIP | 820PF | 5% | 50V | |
| C034 | 1-163-088-00 | CERAMIC CHIP | 5PF | | 50V | |
| C035 | 1-163-097-00 | CERAMIC CHIP | 15PF | 5% | 50V | |
| C036 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C037 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C038 | 1-124-907-11 | ELECT | 10uF | 20% | 50V | |
| C039 | 1-163-033-00 | CERAMIC CHIP | 0.022uF | | 50V | |
| C040 | 1-124-252-00 | ELECT | 0.33uF | 20% | 50V | |
| C041 | 1-163-989-11 | CERAMIC CHIP | 0.033uF | 10% | 25V | |
| C042 | 1-163-033-00 | CERAMIC CHIP | 0.022uF | | 50V | |
| C043 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C044 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C045 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C047 | 1-163-033-00 | CERAMIC CHIP | 0.022uF | | 50V | |
| C048 | 1-163-114-00 | CERAMIC CHIP | 75PF | 5% | 50V | |
| C049 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C050 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C051 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C052 | 1-124-927-11 | ELECT | 4.7uF | 20% | 100V | |
| C053 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C057 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V | |
| C058 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V | |
| C059 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C060 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C061 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C062 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C063 | 1-163-127-00 | CERAMIC CHIP | 270PF | 5% | 50V | |
| C064 | 1-163-119-00 | CERAMIC CHIP | 120PF | 5% | 50V | |
| C065 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C066 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C067 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V | |
| C068 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C069 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C070 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V | |
| C071 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C072 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V | |
| C073 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C074 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C075 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C077 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V | |
| C078 | 1-130-477-00 | MYLAR | 0.0033uF | 5% | 50V | |
| C079 | 1-124-463-00 | ELECT | 0.1uF | 20% | 50V | |
| C080 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C081 | 1-163-139-00 | CERAMIC CHIP | 820PF | 5% | 50V | |
| C082 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C083 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C084 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C085 | 1-124-927-11 | ELECT | 4.7uF | 20% | 100V | |
| C086 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C087 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C088 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C089 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C090 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C091 | 1-124-589-11 | ELECT | 47uF | 20% | 16V | |
| C092 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C093 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C094 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C096 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C097 | 1-124-589-11 | ELECT | 47uF | 20% | 16V | |
| C098 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C100 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C101 | 1-124-126-00 | ELECT | 47uF | 20% | 10V | |
| C104 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C105 | 1-163-092-00 | CERAMIC CHIP | 9PF | 0.25PF | 50V | |
| C107 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C111 | 1-163-107-00 | CERAMIC CHIP | 39PF | 5% | 50V | |
| C113 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V | |
| C114 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V | |
| C118 | 1-163-089-00 | CERAMIC CHIP | 6PF | | 50V | |
| C119 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V | |
| C120 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V | |
| C130 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V | |
| | | ( FILTER, CERAMIC ) | | | | |
| CF001 | 1-527-943-00 | FILTER, CERAMIC | | | | |
| | | ( CONNECTOR ) | | | | |
| CN001 | 1-573-828-11 | CONNECTOR, BOARD TO BOARD 14P | | | | |
| CN002 | 1-573-830-11 | CONNECTOR, BOARD TO BOARD 16P | | | | |
| | | ( DIODE ) | | | | |
| D001 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D002 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D003 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D004 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D006 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D007 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D008 | 8-719-911-19 | DIODE 1SS119 | | | | |
| D010 | 8-719-911-19 | DIODE 1SS119 | | | | |
| | | ( DELAY LINE ) | | | | |
| DL001 | 1-415-728-31 | DELAY LINE, 2H (ULTRASONIC) | | | | |
| DL002 | 1-415-856-11 | DELAY LINE, ULTRASONIC GLASS | | | | |
| | | ( IC ) | | | | |
| IC001 | 8-759-046-76 | IC LA7396 | | | | |
| IC002 | 8-759-821-51 | IC LC8992 | | | | |
| IC003 | 8-759-637-11 | IC M52063SP | | | | |
| IC004 | 8-759-996-63 | IC BA7025L | | | | |
| | | ( JUMPER RESISTOR ) | | | | |
| JR004 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR044 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR051 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR052 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR053 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR054 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR055 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR056 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR057 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR058 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR059 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR060 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR061 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR062 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR063 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR064 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR065 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR066 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR067 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR068 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR069 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR070 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR071 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR072 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR073 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR074 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR075 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR076 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR077 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR078 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR079 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR080 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR081 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR082 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR083 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR084 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR085 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |

# YC-120

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| JR086 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR087 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR088 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR089 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR090 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR091 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR092 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W | |
| JR093 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR094 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| JR095 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |

( COIL )

| | | | |
|---|---|---|---|
| L001 | 1-410-524-41 | INDUCTOR 180uH | |
| L002 | 1-408-411-00 | INDUCTOR 15uH | |
| L003 | 1-408-411-00 | INDUCTOR 15uH | |
| L006 | 1-408-416-00 | INDUCTOR 39uH | |
| L008 | 1-408-403-00 | INDUCTOR 3.3uH | |
| L009 | 1-408-421-00 | INDUCTOR 100uH | |
| L010 | 1-408-421-00 | INDUCTOR 100uH | |
| L011 | 1-410-515-11 | INDUCTOR 33uH | |
| L012 | 1-410-517-11 | INDUCTOR 47uH | |
| L013 | 1-410-437-11 | INDUCTOR 330uH | |
| L014 | 1-410-439-11 | INDUCTOR 470uH | |
| L015 | 1-408-421-00 | INDUCTOR 100uH | |
| L016 | 1-408-421-00 | INDUCTOR 100uH | |
| L017 | 1-408-421-00 | INDUCTOR 100uH | |
| L018 | 1-408-419-00 | INDUCTOR 68uH | |
| L019 | 1-408-421-00 | INDUCTOR 100uH | |
| L020 | 1-408-415-00 | INDUCTOR 33uH | |
| L023 | 1-410-435-21 | INDUCTOR 220uH | |

( TRANSISTOR )

| | | | | |
|---|---|---|---|---|
| Q001 | 8-729-424-18 | TRANSISTOR | UN2113 | |
| Q002 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q003 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q004 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q005 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q006 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q007 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q008 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q009 | 8-729-424-18 | TRANSISTOR | UN2113 | |
| Q010 | 8-729-424-18 | TRANSISTOR | UN2113 | |
| Q011 | 8-729-422-37 | TRANSISTOR | 2SB709A-R | |
| Q012 | 8-729-422-37 | TRANSISTOR | 2SB709A-R | |
| Q013 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q014 | 8-729-424-56 | TRANSISTOR | UN211L | |
| Q015 | 8-729-424-18 | TRANSISTOR | UN2113 | |
| Q016 | 8-729-422-37 | TRANSISTOR | 2SB709A-R | |
| Q017 | 8-729-422-37 | TRANSISTOR | 2SB709A-R | |
| Q018 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |

| Ref. No. | Part No. | Description | | Remark |
|---|---|---|---|---|
| Q019 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q020 | 8-729-422-37 | TRANSISTOR | 2SB709A-R | |
| Q021 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q022 | 8-729-422-28 | TRANSISTOR | 2SD601A-R | |
| Q025 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q033 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q034 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q035 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q036 | 8-729-421-19 | TRANSISTOR | UN2213 | |
| Q110 | 8-729-421-22 | TRANSISTOR | UN2211 | |

( RESISTOR )

| | | | | | | |
|---|---|---|---|---|---|---|
| R001 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R002 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R003 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R004 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R005 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R006 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R007 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R008 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R009 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R010 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R011 | 1-216-689-11 | METAL CHIP | 39K | 0.5% | 1/10W | |
| R012 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R013 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R014 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R015 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R016 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R017 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | |
| R018 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R019 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | |
| R021 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R022 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R023 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R024 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R025 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R026 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R029 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R030 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R031 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R034 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R035 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R037 | 1-216-052-00 | METAL CHIP | 1.3K | 5% | 1/10W | |
| R038 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R039 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R040 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R041 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R042 | 1-216-052-00 | METAL CHIP | 1.3K | 5% | 1/10W | |
| R043 | 1-216-036-00 | METAL CHIP | 300 | 5% | 1/10W | |
| R045 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R046 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R049 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R050 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R051 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R052 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R053 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R054 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R055 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R056 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R057 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R058 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R059 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R060 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R061 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R062 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R063 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R064 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R065 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R066 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R067 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R068 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W | |
| R069 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R070 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R071 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R072 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R073 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R074 | 1-216-109-00 | METAL CHIP | 330K | 5% | 1/10W | |
| R075 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R076 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R077 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R078 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R080 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R110 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R111 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W | F |
| R113 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R114 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R115 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R116 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R117 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W | |
| R118 | 1-249-404-00 | CARBON | 82 | 5% | 1/4W | |
| R119 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R120 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R121 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R122 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R123 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R124 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |

( VARIABLE RESISTOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| RV002 | 1-241-630-11 | RES, ADJ, CARBON 10K | |
| RV003 | 1-241-630-11 | RES, ADJ, CARBON 10K | |
| RV004 | 1-241-630-11 | RES, ADJ, CARBON 10K | |
| RV005 | 1-241-630-11 | RES, ADJ, CARBON 10K | |
| RV006 | 1-241-628-11 | RES, ADJ, CARBON 2.2K | |
| RV007 | 1-241-630-11 | RES, ADJ, CARBON 10K | |
| RV008 | 1-238-011-11 | RES, ADJ, CARBON 470 | |

( COIL )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| T001 | 1-409-467-11 | COIL (TRAP 7.8K) | |

( VIBRATOR )

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| X001 | 1-579-608-11 | VIBRATOR, CRYSTAL (4.433619MHz) | |

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1-413-719-12 POWER BLOCK (PS/ME)
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(Ref.No 7000 Series)

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| ⚠ | 1-540-054-11 | INLET AC | |

( CAPACITOR )

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| ⚠C101 | 9-902-038-01 | METALIZED | 0.22MF | | 250V | |
| ⚠C102 | 9-902-039-01 | METALIZED | 0.1MF | | 250V | |
| ⚠C103 | 1-161-742-00 | CERAMIC CHIP | 2200PF | 20% | 250V | |
| ⚠C104 | 1-161-742-00 | CERAMIC CHIP | 2200PF | 20% | 250V | |
| ⚠C105 | 1-161-742-00 | CERAMIC CHIP | 2200PF | 20% | 250V | |
| ⚠C106 | 1-162-599-12 | CERAMIC CHIP | 4700PF | 20% | 250V | |
| ⚠C107 | 1-162-599-12 | CERAMIC CHIP | 4700PF | 20% | 250V | |
| ⚠C108 | 9-902-040-01 | ELECT | 180MF | | 400V | |
| C109 | 9-902-492-11 | METALIZED | 0.047MF | | 400V | |
| C110 | 9-902-547-01 | CERAMIC | 220PF | | 1KV | |
| C111 | 1-124-791-11 | ELECT | 1MF | 20% | 100V | |
| C112 | 1-130-495-00 | MYLAR | 0.1MF | 5% | 50V | |
| C113 | 1-130-491-00 | MYLAR | 0.047MF | 5% | 50V | |
| C115 | 1-130-491-00 | MYLAR | 0.047MF | 5% | 50V | |
| C201 | 1-124-122-11 | ELECT | 100MF | 20% | 50V | |
| C202 | 1-124-443-00 | ELECT | 100MF | 20% | 10V | |
| C203 | 1-124-556-11 | ELECT | 2200MF | 20% | 16V | |
| C204 | 1-124-445-11 | ELECT | 100MF | 20% | 16V | |
| C205 | 1-124-445-11 | ELECT | 100MF | 20% | 16V | |
| C206 | 1-124-893-11 | ELECT | 2200MF | 20% | 16V | |
| C207 | 1-124-903-11 | ELECT | 1MF | 20% | 50V | |
| C208 | 1-124-472-11 | ELECT | 470MF | 20% | 10V | |
| C209 | 1-124-443-00 | ELECT | 100MF | 20% | 10V | |
| C211 | 1-124-122-11 | ELECT | 100MF | 20% | 50V | |
| C212 | 1-124-471-00 | ELECT | 1000MF | 20% | 6.3V | |
| C213 | 1-130-483-00 | MYLAR | 0.01MF | 5% | 50V | |
| C214 | 1-130-483-00 | MYLAR | 0.01MF | 5% | 50V | |
| C215 | 1-124-443-00 | ELECT | 100MF | 20% | 10V | |
| C216 | 1-130-483-00 | MYLAR | 0.01MF | 5% | 50V | |
| C217 | 9-998-888-01 | CERAMIC CHIP | 1000PF | | 1KV | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

# POWER BLOCK (PS/ME)

# POWER BLOCK (EE)

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | ( CONNECTOR ) | | | |
| CN1 | 1-569-341-11 | CONNECTOR, BOARD TO BOARD 19P | | | |
| | | ( DIODE ) | | | |
| ⚠D101 | 8-719-510-06 | DIODE S1WB60 | | | |
| ⚠D102 | 8-902-095-01 | DIODE ERA15-06 | | | |
| ⚠D103 | 9-902-489-01 | DIODE EG01C | | | |
| D104 | 9-900-535-01 | DIODE AU02Z | | | |
| D105 | 9-900-535-01 | DIODE AU02Z | | | |
| D106 | 8-719-175-88 | DIODE RD7.5F-B3 | | | |
| D107 | 9-902-552-01 | DIODE MA165 | | | |
| D108 | 8-719-109-63 | DIODE RD3.0ES-B2 | | | |
| ⚠D201 | 9-900-535-01 | DIODE AU02Z | | | |
| D202 | 8-719-114-88 | DIODE RD18JS-B3 | | | |
| ⚠D203 | 8-719-230-02 | DIODE 30DF2 | | | |
| ⚠D204 | 8-719-982-04 | DIODE ERB81-004 | | | |
| ⚠D205 | 9-900-535-01 | DIODE AU02Z | | | |
| ⚠D206 | 9-900-535-01 | DIODE AU02Z | | | |
| | | ( FUSE ) | | | |
| ⚠F101 | 1-532-203-00 | FUSE, TIME-LAG | 2A | | 250V |
| | | ( IC ) | | | |
| ⚠IC201 | 8-759-420-19 | IC AN1431T | | | |
| ⚠IC202 | 8-749-921-99 | IC SI-3120CA | | | |
| ⚠IC203 | 8-749-921-99 | IC SI-3120CA | | | |
| ⚠IC204 | 8-759-420-19 | IC AN1431T | | | |
| | | ( COIL ) | | | |
| ⚠L101 | 9-900-520-01 | LINE FILTER | | | |
| L102 | 9-902-553-01 | BEADS CORE | | | |
| L201 | 1-410-470-11 | MICRO INDUCTOR (10uH) | | | |
| | | ( PHOTO COUPLER ) | | | |
| ⚠PC101 | 9-902-498-11 | COUPLER, PHOTO | | | |
| | | ( TRANSISTOR ) | | | |
| ⚠Q101 | 9-902-496-11 | TRANSISTOR | 2SC4300 | | |
| ⚠Q102 | 9-900-519-01 | TRANSISTOR | 2SC3377 | | |
| Q202 | 8-729-140-98 | TRANSISTOR | 2SD773-5 | | |
| | | ( RESISTOR ) | | | |
| ⚠R101 | 9-902-548-01 | CEMENT | 4.7 | | 3W |
| R102 | 1-247-883-00 | CARBON(SMALL) | 150K | 5% | 1/4W |
| R103 | 1-247-883-00 | CARBON(SMALL) | 150K | 5% | 1/4W |
| R104 | 1-247-883-00 | CARBON(SMALL) | 150K | 5% | 1/4W |
| R105 | 1-249-438-11 | CARBON(SMALL) | 56K | 5% | 1/4W |
| ⚠R106 | 9-902-494-11 | METAL OXIDE | 68K | | 3W |
| R107 | 1-215-886-11 | METAL OXIDE | 100 | 5% | 2W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R108 | 1-215-910-00 | METAL OXIDE | 68 | 5% | 3W |
| R109 | 1-249-414-11 | CARBON(SMALL) | 560 | 5% | 1/4W |
| R111 | 1-249-406-11 | CARBON(SMALL) | 120 | 5% | 1/4W |
| ⚠R201 | 1-247-727-11 | CARBON | 10 | 5% | 1/2W |
| R203 | 1-249-417-11 | CARBON(SMALL) | 1K | 5% | 1/4W |
| R205 | 1-260-083-11 | CARBON(SMALL) | 47 | 5% | 1/2W |
| R206 | 1-247-838-00 | METAL FILM | 2K | 5% | 1/4W |
| R207 | 1-249-421-11 | METAL FILM | 1.5K | 5% | 1/4W |
| ⚠R211 | 9-902-485-01 | FUSE | 10 | 5% | 1/4W |
| R212 | 1-249-429-11 | CARBON(SMALL) | 10K | 5% | 1/4W |
| ⚠R213 | 9-902-556-01 | FUSE | 1 | 5% | 1/4W |
| R214 | 1-249-405-11 | CARBON(SMALL) | 100 | 5% | 1/4W |
| R215 | 1-249-405-11 | CARBON(SMALL) | 100 | 5% | 1/4W |
| R216 | 1-249-417-11 | CARBON(SMALL) | 1K | 5% | 1/4W |
| R217 | 1-249-406-11 | CARBON(SMALL) | 120 | 5% | 1/4W |
| R218 | 1-249-421-11 | METAL FILM | 1.5K | 5% | 1/4W |
| R219 | 1-249-421-11 | METAL FILM | 1.5K | 5% | 1/4W |
| R223 | 1-249-410-11 | CARBON(SMALL) | 270 | 5% | 1/4W |
| | | ( THYRISTOR ) | | | |
| ⚠SCR201 | 9-902-500-11 | THYRISTOR | 2P4M | | |
| | | ( TRANSFORMER ) | | | |
| ⚠T101 | 9-902-549-01 | TRANS, SWITCHING | | | |

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1-413-718-12 POWER BLOCK (EE) (Ref.No 6,000 Series)
***********

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| ⚠ | 1-540-045-11 | INLET, AC | | | |
| | | ( CAPACITOR ) | | | |
| ⚠C101 | 9-902-039-01 | METALIZED | 0.1uF | | 250V |
| ⚠C102 | 9-902-039-01 | METALIZED | 0.1uF | | 250V |
| ⚠C103 | 1-161-742-00 | CERAMIC | 2200PF | 20% | 250V |
| ⚠C104 | 1-161-742-00 | CERAMIC | 2200PF | 20% | 250V |
| ⚠C105 | 1-161-742-00 | CERAMIC | 2200PF | 20% | 250V |
| ⚠C106 | 1-161-742-00 | CERAMIC | 2200PF | 20% | 250V |
| ⚠C107 | 1-162-599-12 | CERAMIC | 4700PF | 20% | 250V |
| ⚠C108 | 1-162-599-12 | CERAMIC | 4700PF | 20% | 250V |
| ⚠C109 | 1-162-599-12 | CERAMIC | 4700PF | 20% | 250V |
| ⚠C110 | 9-902-493-11 | ELECT | 82uF | | 400V |
| C111 | 9-902-492-11 | METALIZED | 0.047uF | | 400V |
| C112 | 9-902-547-01 | CERAMIC | 220PF | | 1KV |
| C114 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C115 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C201 | 1-124-122-11 | ELECT | 100uF | 20% | 50V |
| C202 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C203 | 1-124-556-11 | ELECT | 2200uF | 20% | 16V |
| C204 | 1-126-101-11 | ELECT | 100uF | 20% | 16V |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

# POWER BLOCK (EE)

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C205 | 1-126-101-11 | ELECT | 100uF | 20% | 16V | |
| C206 | 1-124-893-11 | ELECT | 2200uF | 20% | 10V | |
| C207 | 1-124-903-11 | ELECT | 1uF | 20% | 50V | |
| C208 | 1-124-472-11 | ELECT | 470uF | 20% | 10V | |
| C209 | 1-124-443-00 | ELECT | 100uF | 20% | 10V | |
| C211 | 1-124-122-11 | ELECT | 100uF | 20% | 50V | |
| C212 | 1-124-471-00 | ELECT | 1000uF | 20% | 6.3V | |
| C213 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V | |
| C214 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V | |
| C215 | 1-124-443-00 | ELECT | 100uF | 20% | 10V | |
| C216 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V | |
| C217 | 9-998-888-01 | CERAMIC | 1000PF | | 1KV | |
| | | ( CONNECTOR ) | | | | |
| CN1 | 1-569-341-11 | CONNECTOR BOARD TO BOARD 19P | | | | |
| | | ( DIODE ) | | | | |
| ⚠D101 | 8-719-510-06 | DIODE S1WB60 | | | | |
| ⚠D102 | 9-902-094-01 | DIODE AM01A | | | | |
| D103 | 9-902-489-01 | DIODE EG01C | | | | |
| D104 | 8-719-200-82 | DIODE 11ES2 | | | | |
| D105 | 9-902-552-01 | DIODE MA165 | | | | |
| D106 | 8-719-109-63 | DIODE RD3.0ES-B2 | | | | |
| ⚠D201 | 9-900-535-01 | DIODE AU02Z | | | | |
| D202 | 8-719-114-87 | DIODE RD18JS-B2 | | | | |
| ⚠D203 | 8-719-230-02 | DIODE 30DF2 | | | | |
| ⚠D204 | 8-719-982-04 | DIODE ERB81-004 | | | | |
| ⚠D205 | 9-900-535-01 | DIODE AU02Z | | | | |
| ⚠D206 | 9-900-535-01 | DIODE AU02Z | | | | |
| | | ( FUSE ) | | | | |
| ⚠F101 | 1-532-203-00 | FUSE | 2A | 250V | | |
| | | ( IC ) | | | | |
| ⚠IC201 | 8-759-420-19 | IC AN1431T | | | | |
| ⚠IC202 | 8-749-921-99 | IC SI-3120CA | | | | |
| ⚠IC203 | 8-749-921-99 | IC SI-3120CA | | | | |
| ⚠IC204 | 8-759-420-19 | IC AN1431T | | | | |
| | | ( COIL ) | | | | |
| ⚠L101 | 9-900-520-01 | LINE FILTER | | | | |
| ⚠L102 | 9-900-520-01 | LINE FILTER | | | | |
| L201 | 1-410-470-11 | MICRO INDUCTOR | | | | |
| | | ( PHOTO COUPLER ) | | | | |
| ⚠PC101 | 9-902-498-11 | COUPLER, PHOTO | | | | |
| | | ( TRANSISTOR ) | | | | |
| ⚠Q101 | 9-902-497-11 | TRANSISTOR | 2SC4231 | | | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| ⚠Q102 | 9-900-517-01 | TRANSISTOR | 2SC3377 | | | |
| Q202 | 8-729-140-98 | TRANSISTOR | 2SD773-5 | | | |
| | | ( RESISTOR ) | | | | |
| R101 | 1-202-719-00 | SOLID | 1M | | 1/2W | |
| R102 | 9-902-551-11 | CEMENT | 4.7 | | 2W | |
| R103 | 1-247-883-00 | CARBON(SMALL) | 150K | 5% | 1/4W | |
| R104 | 1-247-883-00 | CARBON(SMALL) | 150K | 5% | 1/4W | |
| R105 | 1-247-883-00 | CARBON(SMALL) | 150K | 5% | 1/4W | |
| R106 | 1-249-441-11 | CARBON(SMALL) | 100K | 5% | 1/4W | |
| ⚠R107 | 1-215-928-11 | METAL OXIDE | 68K | 5% | 3W | |
| R108 | 1-215-864-00 | METAL OXIDE | 150 | 5% | 1W | |
| R109 | 1-249-397-11 | CARBON(SMALL) | 22 | 5% | 1/4W | |
| R110 | 1-249-413-11 | CARBON(SMALL) | 470 | 5% | 1/4W | |
| R112 | 1-249-441-11 | CARBON(SMALL) | 100K | 5% | 1/4W | |
| ⚠R201 | 1-247-727-51 | CARBON | 10 | 5% | 1/2W | |
| R203 | 1-249-417-11 | CARBON | 1K | | 1/4W | |
| R205 | 1-260-083-11 | CARBON | 47 | 5% | 1/2W | |
| R206 | 1-247-838-00 | METAL FILM | 2K | 5% | 1/4W | |
| R207 | 1-249-421-11 | METAL FILM | 1.5K | 5% | 1/4W | |
| ⚠R211 | 9-902-485-01 | FUSE | 10 | | 1/4W | F |
| R212 | 1-249-429-11 | CARBPM | 10K | 5% | 1/4W | |
| ⚠R213 | 9-902-556-01 | FUSE | 1 | | 1/2W | F |
| R214 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | |
| R215 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | |
| R216 | 1-249-417-11 | CARBON | 1K | | 1/4W | |
| R217 | 1-249-406-11 | CARBON | 120 | 5% | 1/4W | |
| R218 | 1-249-421-11 | METAL FILM | 1.5K | 5% | 1/4W | |
| R219 | 1-249-421-11 | METAL FILM | 1.5K | 5% | 1/4W | |
| R223 | 1-249-410-11 | CARBON | 270 | 5% | 1/4W | |
| | | ( THYRISTOR ) | | | | |
| ⚠SCR201 | 8-719-107-87 | THYRISTOR | 03P2M | | | |
| | | (TRANSFORMER ) | | | | |
| ⚠T101 | 9-902-550-01 | TRANS, SWITCHING | | | | |

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## MISCELLANEOUS

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| | | |
|---|---|---|
| 5 | 1-466-692-31 | SWITCH BLOCK, CONTROL (EXCEPT EE MODEL) |
| 5 | 1-466-692-51 | SWITCH BLOCK, CONTROL (EE MODEL) |
| 57 | 1-572-662-11 | SWITCH, ROTARY |
| ⚠66 | 1-413-718-12 | POWER BLOCK (EE MODEL) |
| ⚠66 | 1-413-719-12 | POWER BLOCK (EXCEPT EE MODEL) |
| 112 | 3-946-992-01 | PWB (B) ASSY, FL |
| 191 | 3-947-626-01 | SENSOR (EYH-S10R) |
| 215 | 3-946-973-01 | HEAD (HV113001), FE |
| 221 | 8-848-540-01 | DRUM ASSY DZR-21-R |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 234 | 3-947-082-01 | HEAD (HVMZA1136), ACE | |
| 301 | 3-946-954-01 | PWB ASSY, BASE | |
| 303 | 3-946-958-01 | SWITCH, MODE | |
| 312 | 3-947-029-01 | LEAD ASSY, CM | |
| 334 | 3-949-184-01 | PWB (B) ASSY, DM | |
| 336 | 3-946-956-01 | PWB ASSY, S SENSOR | |
| 345 | 3-946-955-01 | PWB ASSY, T SENSOR | |
| 349 | 3-949-190-01 | WIRE ASSY, DM | |
| M901 | 8-848-597-11 | DRUM ASSY DZH-48A-R | |
| M902 | 3-947-028-01 | MOTOR (F2QKB38)(CAPSTAN) | |
| M903 | 3-946-917-01 | MOTOR ASSY, L (LOADING) | |

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ACCESSORIES & PACKING MATERIALS
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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * | 3-946-639-01 | CUSHION (UPPER) | |
| * | 3-946-640-01 | CUSHION (LOWER) | |
| * | 3-947-085-31 | INDIVIDUAL CARTON (PS MODEL) | |
| * | 3-947-085-41 | INDIVIDUAL CARTON (ME MODEL) | |
| * | 3-947-086-31 | INDIVIDUAL CARTON (EE MODEL) | |
| | 1-551-513-00 | CORD, CONNECTION (PAL) | |
| | 1-569-008-11 | ADAPTER, CONVERSION 2P (ME MODEL) | |
| ⚠ | 1-574-131-21 | CORD, POWER SUPPLY | |
| | 1-693-142-21 | REMOTE COMMANDER (RMT-V116A) | |
| | 3-695-308-01 | DRIVER, TUNING | |
| | 3-754-679-51 | MANUAL, INSTRUCTION (ENGLISH, CHINESE)(PS MODEL) | |
| | 3-754-679-61 | MANUAL, INSTRUCTION (ENGLISH, SPANISH, ARABIC)(ME MODEL) | |
| | 3-754-679-91 | MANUAL, INSTRUCTION (ENGLISH, GERMAN, RUSSIAN, POLISH)(EE MODEL) | |
| * | 3-947-662-01 | CARD (4 HEAD), SCHEMATIC DIAGRAM (EE MODEL) | |

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HARDWARE LIST
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| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| #1 | 7-685-648-79 | SCREW +BVTP 3X12 TYPE2 IT-3 | |
| #2 | 7-621-773-86 | SCREW +PTT 2.6X4 (S) | |
| #3 | 7-621-770-87 | SCREW +PTT 2.6X5 (S) | |
| #4 | 7-682-547-04 | SCREW +PTT 3X6 (S) | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

# SECTION 7
# ELECTRICAL ADJUTMENTS

**During the adjustment, see the parts arrangement diagram relevant to the adjustment on page 130.**

Necessary items and indications for total adjustment of electric circuit of this unit will be described in this chapter.

### 〔Instruments to be Used〕

1) Color TV
2) Single or dual trace type oscilloscope, band more than 30 MHz, delay mode, as provided.
3) Frequency counter (4 digits or more)
4) PAL pattern generator
5) Digital voltmeter
6) Audio level meter
7) Audio generator
8) Attenuator
9) Distortion meter
10) PAL Alignment tape
    Part code: H7099052H (MH-2)
11) SECAM pattern generator

### 〔Connection〕

Unless otherwise specified, connect and adjust the measurement equipment as follows.

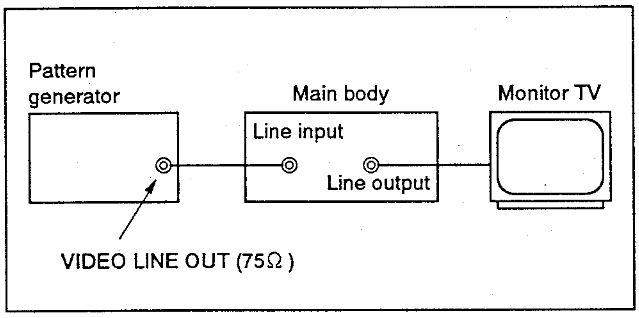

Pattern generator
Main body
Monitor TV
Line input
Line output
VIDEO LINE OUT (75Ω)

Fig. 7-1.

### 〔Set-up for Adjustment〕

The video signal from the pattern generator is used as adjustment signal for electrical adjustment. This video signal should meet the requirement. Connect the oscilloscope to the video input terminal on the MA-119 board and make sure that the amplitudes of sync signal of video signal, video portion and burst signal are flat at approximately 0.3, 0.7 and 0.3V, respectively, and that the level ratio of the burst signal and "red signal" are 0.30 : 0.66. Fig. 7-2. shows video signals (PAL color bars) used in adjusting the electrical adjustment.

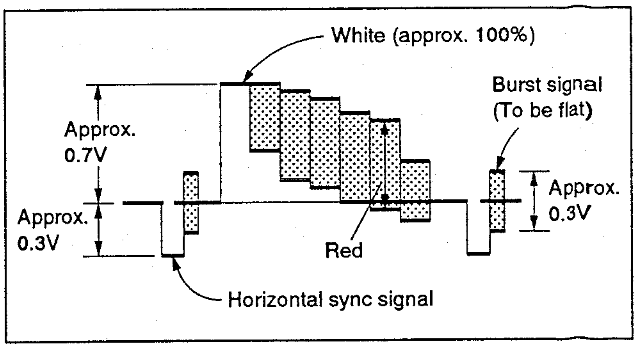

White (approx. 100%)
Burst signal
(To be flat)
Approx.
0.7V
Approx.
0.3V
Approx.
0.3V
Red
Horizontal sync signal

Fig. 7-2. PAL Color bar signal of pattern generator

### 〔Alignment Tape (MH-2)〕

| | Mode | Time | video signal | Audio signal |
|---|---|---|---|---|
| 1 | SP | Ten minutes | Stair-step | 6 kHz |
| 2 | | Five minutes | —— | 3 kHz |
| 3 | | Ten minutes | Color bar | 1 kHz |
| 4 | | Three minutes | RF sweep | |

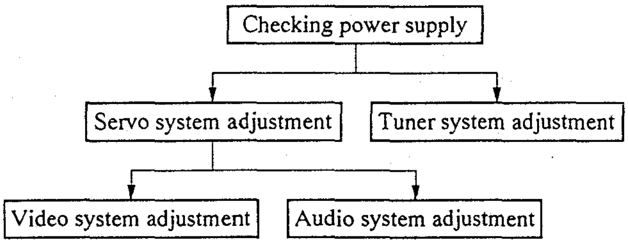
**〔Specified Input/Output Level Impedance〕**

**Input/output terminal**

VIDEO LINE IN Pin jack
Input signal: 1 Vp-p, 75Ω , unbalanced
Sync negative
VIDEO LINE OUT Pin jack
Output signal: 1 Vp-p, 75Ω , unbalanced
Sync negative
AUDIO LINE IN Pin jack
Input level: –7.5 dBs
(0 dBs=0.775 Vrms)
Input impedance: More than 47 kΩ
AUDIO LINE OUT Pin jack
Specified output: –7.5 dBs
At 47 kΩ loaded.
Load impedance: More than 10 kΩ

**〔Adjustment Sequence〕**

Make the electrical adjustment in the following sequences.



## 7-1. POWER SUPPLY CHECK (MA-119 BOARD)

| | |
|---|---|
| Mode | E-E |
| Measurement Equipment | Digital voltmeter |
| UNSW 5.9V check | |
| Measurement Point | Pin ⑧ of CN801 |
| Specified Value | 5.9 ± 0.25 Vdc |
| MTR 12V check | |
| Measurement Point | Pin ②, ③ of CN801 |
| Specified Value | 12.3 ± 0.3 Vdc |
| SW 12V check | |
| Measurement Point | Pin ⑥ of CN801 |
| Specified Value | 12.3 ± 0.3 Vdc |
| SW 9V check | |
| Measurement Point | Pin ⑧ of IC201 |
| Specified Value | 9.0 ± 0.5 Vdc |
| SW 5V check | |
| Measurement Point | Pin ⑨ of CN801 |
| Specified Value | 5.0 ± 0.3 Vdc |
| +45V check | |
| Measurement Point | Pin ⑮ of CN801 |
| Specified Value | 43 ± 3 Vdc |
| –30V check | |
| Measurement Point | Pin ⑱ of CN801 |
| Specified Value | –27.5 ± 2.5 Vdc |
| DC 3.6V check | |
| Measurement Point | Between Pin ⑰ and Pin ⑯ of CN801 |
| Specified Value | 3.3 ± 0.25 Vdc |

Checking Method:

1) Confirm that each voltage meets the specified value.

## 7-2. SERVO SYSTEM ADJUSTMENT

- Make adjustment with switches set to following positions.
  COLOR SYSTEM·····················PAL/ME-SECAM

### 1. Switching position adjustment (MA-119 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape, Stair step |
| Measurement Point | CH1: Pin ⑥ of CN102 (V OUT)<br>CH2: Pin ⑤ of CN101 (RF SWP) |
| Measurement Equipment | Oscilloscope |
| Adjustment Element | RV501 |
| Specified Value | 413 ± 32 μsec (6.5 ± 0.5H) |

Adjustment Method:
1) Press the tracking buttons ▼ and ▲ at a time.
2) Adjust for 413 ± 32 μsec (6.5 ± 0.5) using RV501.

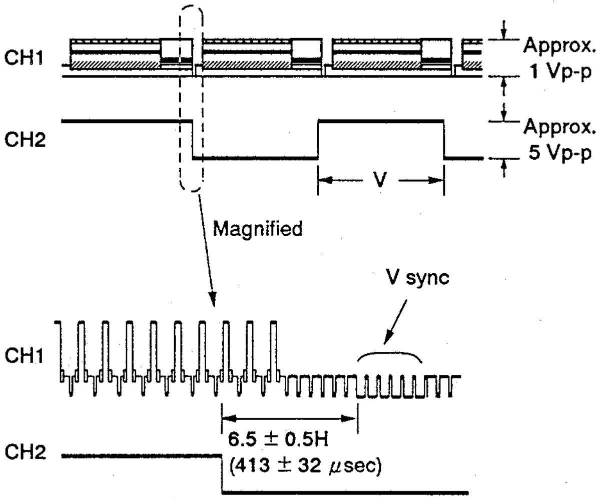


Fig. 7-3. Switching position adjustment

## 7-3. VIDEO ADJUSTMENT

Adjust the video system in the following sequences as a rule. The color video signal supplied from the pattern generator is used as a video input signal for video system adjustment in the recording mode. Make sure that sync and color burst signals meet requirements specified at set up of adjustment shown in Fig. 7-2.

- Make adjustment with switches set to following positions.
  COLOR SYSTEM·····················PAL/ME-SECAM
  RENTAL PICTURE ··················OFF
  SHARPNESS···························CENTER CLICK
  TAPE SPEED ··························SP

**〔Adjustment Sequences〕**
1) Crystal oscillation frequency confirmation
2) Playback Y signal level adjustment
3) Sync AGC adjustment
4) Sync tip carrier set and deviation adjustment
5) Recording chroma signal level adjustment
6) Y signal recording level check

### 1. Crystal oscillation frequency confirmation (YC-120 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Any tape |
| Measurement Point | Pin ㉑ of IC001 |
| Measurement Equipment | Frequency counter, Oscilloscope |
| Specified Value | 8867238 ± 120 Hz |

**Note:** Connect the frequency counter through a buffer amplifier (oscilloscope, etc) of high input impedance (1 MΩ or more) and low capacity (10 pF or less).

Confirmation Method:
1) Make sure that the frequency is 8867238 ± 120 Hz.
2) Make sure that the amplitude is 380 ± 100 mVp-p.

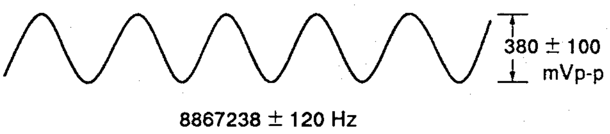


Fig. 7-4.

## 2. Playback Y signal level adjustment (YC-120 board)

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape, color bar |
| Measurement Point | Pin ⑥ of CN002 (V OUT) |
| Measurement Equipment | Oscilloscope |
| Adjustment Element | RV005 |
| Specified Value | 2.00 ± 0.02 Vp-p |

**Note:** Make this adjustment RENTAL PICTURE OFF condition.

Adjustment Method:
1) Adjust for 2.00 ± 0.02 Vp-p using RV005.

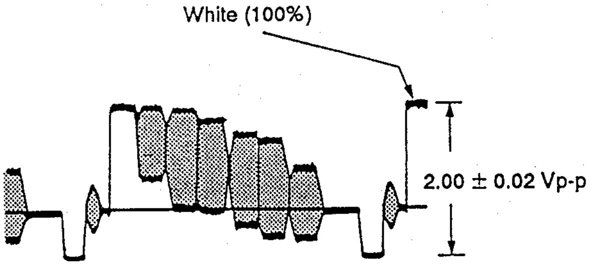


Fig. 7-5.

## 3. Sync AGC adjustment (YC-120 board)

| | |
|---|---|
| Mode | Recording or EE |
| Signal | PAL color bar |
| Measurement Point | Pin ④ of IC001 |
| Measurement | Oscilloscope |
| Equipment | RV003 |
| Adjustment Element | 0.50 ± 0.01 Vp-p |

Adjustment Method:
1) Adjust for 0.50 ± 0.01 Vp-p using RV003.

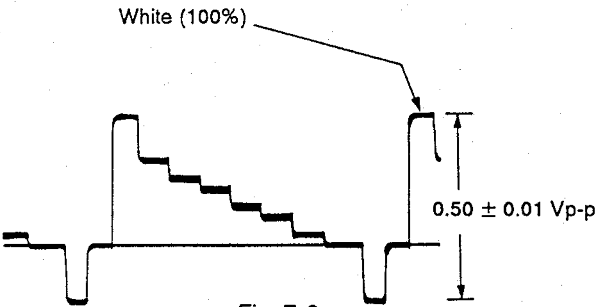


Fig. 7-6.

## 4. Sync tip carrier set and deviation adjustment (YC-120 board)

Before starting this adjustment, be sure to check that "2. playback Y signal level adjustment" has been completed.

| | |
|---|---|
| Sync tip carrier set adjustment | |
| Mode | E-E |
| Signal | No signal |
| Measurement Point | Pin ㊵ of IC001 (REC Y) |
| Measurement Equipment | Frequency counter |
| Adjustment Element | RV002 |
| Specified Value | 3.80 ± 0.05 MHz |
| Deviation adjustment | |
| Mode | Recording and playback |
| Signal | PAL color bar |
| Measurement Point | Pin ⑥ of CN002 (V OUT) |
| Measurement Equipment | Oscilloscope |
| Adjustment Element | RV004 |
| Specified Value | 2.00 ± 0.02 Vp-p |

**Note:** Make this adjustment RENTAL PICTURE OFF condition.

Adjustment Method:
1) Make no signal state and select the E-E mode.
2) Connect the frequency counter to the Pin ㊵ of IC001 and adjust for 3.80 ± 0.05 MHz using RV002.
3) Input the color bar signal to make recording.
4) Playback the recorded tape portion and check the play back Y signal level of the Pin ⑥ of CN002.
   Specification: Should be 2.00 ± 0.02 Vp-p.
5) If does not meet the specification, repeat 1) to 4) after adjusting RV004.

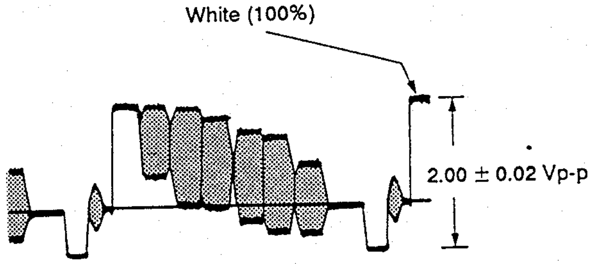


Fig. 7-7.

### 5. Recording chroma signal level adjustment (YC-120 board)

| | |
|---|---|
| Mode | E-E |
| Signal | PAL color bar |
| Measurement Point | Pin ① of CN001 (REC C) |
| Measurement Equipment | Oscilloscope |
| Adjustment Element | RV006 |
| Specified Value | 105± 5 mVp-p |

Adjustment Method:

1) Adjust the color bar "red" level to 105 ± 5 mVp-p using RV006.

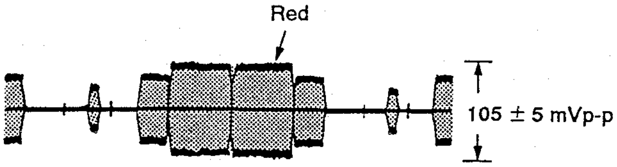


Fig. 7-8.

### 6. Y signal recording level check (YC-120 board)

| | |
|---|---|
| Mode | Recording |
| Signal | No signal |
| Measurement Point | Pin ⑩ of CN001 (Y REC) |
| Measurement Equipment | Oscilloscope |
| Specified Value | 1.00 ± 0.15 Vp-p |

Checking Method:

1) Confirm that the REC Y level is 1.00 ± 0.15 Vp-p.

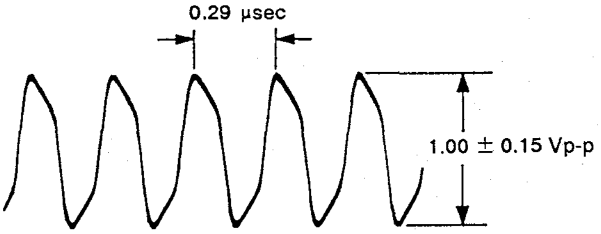


Fig. 7-9.

### 7. AFC adjustment (YC-120 board)

| | |
|---|---|
| Mode | E-E |
| Signal | PAL color bar |
| Measurement Point | Pin ⑦ of IC003 |
| Measurement Equipment | Frequency counter |
| Adjustment Element | RV007 |
| Specified Value | 15745 ± 45 Hz |

Connection:

1) Connect pin ⑮ of IC003 and pin ⑩ (5V) of IC003 with a jumper wire.

Adjustment Method:

1) Adjust for 15745 ± 45 Hz using RV007.

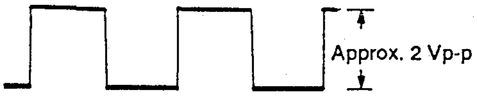


Fig. 7-10.

### 8. SECAM DET adjustment (YC-120 board)

| | |
|---|---|
| Mode | E-E |
| Signal | SECAM color bar |
| Measurement Point | Pin ⑪ of IC004 |
| Measurement Equipment | Oscilloscope |
| Adjustment Element | RV008 |
| Specified Value | 4.9 ± 0.1 Vp-p |

Adjustment Method:

1) Adjust for 4.9 ± 0.1 Vp-p using RV008.

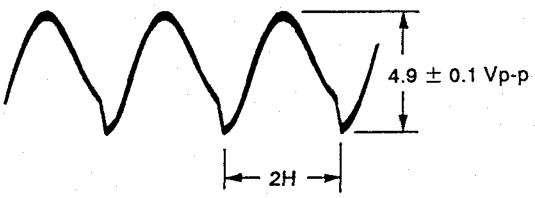


Fig. 7-11.

## 7-4. AUDIO SYSTEM ADJUSTMENT

[Connection]

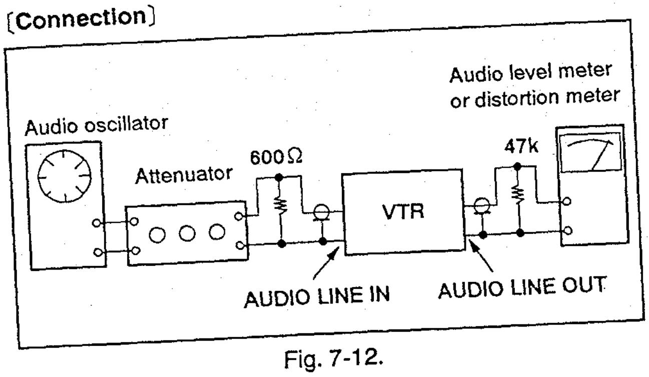


Fig. 7-12.

- Make adjustment with switches set to following positions.
  COLOR SYSTEM····················PAL/ME-SECAM

[Adjustment Sequence]

1) ACE head adjustment
   ...See "VHS MECHANICAL ADJUSTMENT MANUAL III".
2) Playback output level check
3) E-E output level check
4) Recording bias adjustment
5) Overall level characteristic and distortion factor check
6) Overall S/N check

### 1. ACE head adjustment

See "VHS MECHANICAL ADJUSTMENT MANUAL Ⅲ".

### 2. Playback output level check

| Mode | Playback |
|---|---|
| Signal | Alignment tape, 1 kHz (color bar) portion |
| Measurement Point | AUDIO LINE OUT terminal |
| Measurement Equipment | Audio level meter |
| Specified Value | −12.5 ± 2 dBs |

Confirmation Method:

1) Playback 1 kHz portion and make sure that AUDIO LINE OUT signal level is −12.5 ± 2 dBs.

### 3. E-E output level check

| Mode | E-E |
|---|---|
| Signal | 400 Hz, −7.5 dBs |
| Measurement Point | AUDIO LINE OUT terminal |
| Measurement Equipment | Audio level meter |
| Specified Value | −7.5 ± 2 dBs |

Confirmation Method:

1) Input signal of 400 Hz, −7.5 dBs to AUDIO LINE IN.
2) Make sure that AUDIO LINE OUT signal level is −7.5 ± 2 dBs.

### 4. Recording bias adjustment

| Mode | Recording and playback (SP mode) |
|---|---|
| Signal | 400 Hz, −27.5 dBs<br>7 kHz, −27.5 dBs |
| Measurement Point | AUDIO LINE OUT terminal |
| Measurement Equipment | Audio level meter |
| Adjustment Element | RV201 |
| Specified Value | 0 ± 3 dB |

**Note:** Tape path adjustment should have been completed.

Adjustment Method:

1) Input signal of 400 Hz, −27.5 dBs.
2) Make recording.
3) Set the AUDIO LINE IN signal to 7 kHz, −27.5 dBs and make recording.
4) Playback a recorded portion and measure output levels at 400 Hz and 7 kHz.
5) Confirm that the 7 kHz playback signal level is within a range of 0 ± 3 dB against the 400 Hz playback signal level. When beyond this range, adjust RV201 and repeat the steps (1) through (5).

### 5. Overall level characteristic and distortion factor check

| Mode | Recording and playback (SP mode) |
|---|---|
| Signal | AUDIO LINE OUT terminal |
| Measurement Point | Audio level meter and distortion meter |
| Measurement Equipment | Playback level:–7.5 ± 2 dBs |
| Specified Value | Distortion factor: 4% or less |

Adjustment Method:
1) Input audio signal of 400 Hz, –7.5 dBs to AUDIO LINE IN.
2) Make recording.
3) Playback the recorded portion.
4) Make sure that playback level is –7.5 ± 2 dBs.
5) Make sure that distortion factor is within 4%.

### 6. Overall S/N check

| Mode | Recording and playback (SP mode) |
|---|---|
| Signal | No signal |
| Measurement Point | AUDIO LINE OUT terminal |
| Measurement Equipment | Audio level meter |
| Specified Value | Less than –46 dBs |

Confirmation Method:
1) Make no signal input.
2) Make recording.
3) Playback the recorded portion.
4) Confirm that the noise level is less than –46 dBs.

## 7-5. TUNER SYSTEM ADJUSTMENT

### 7-5-1. RF AGC Adjustment (TU701)

| Signal | Broad cast TV signal |
|---|---|
| Adjustment Element | RV on TU701 |

Adjustment Method:
1) Adjust the monitor TV to a maximum contrast.
2) Turn the RV on TU701 to make snow noise visible.
3) Turn the RV on TU701 in an opposite direction and set it to the point where the snow noise disappears.
4) Receive each channel and confirm that there are no beat picture or snow noise due to cross modulation.

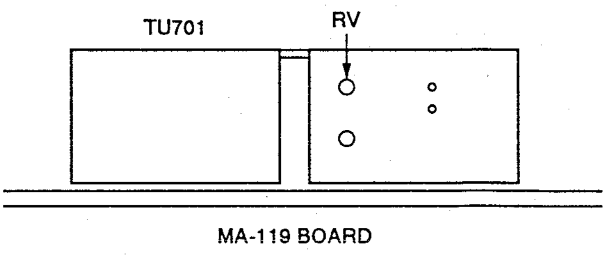
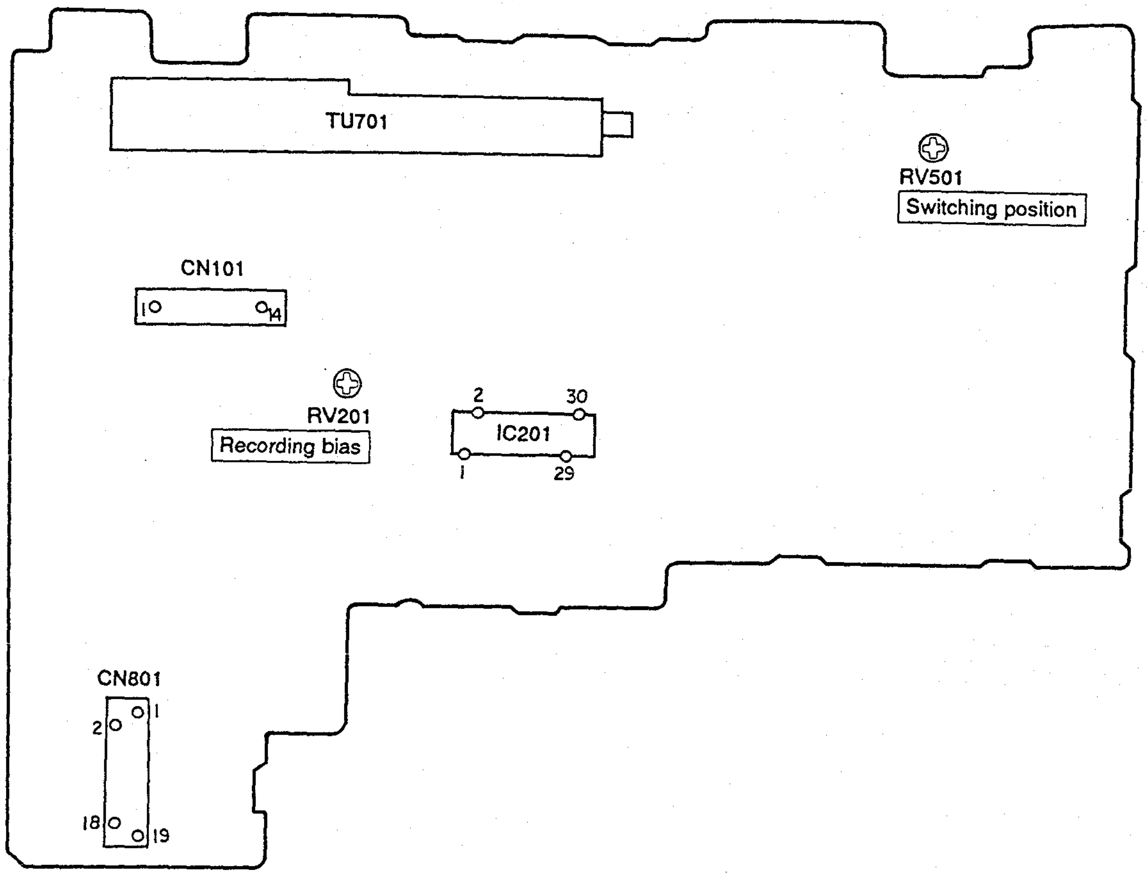


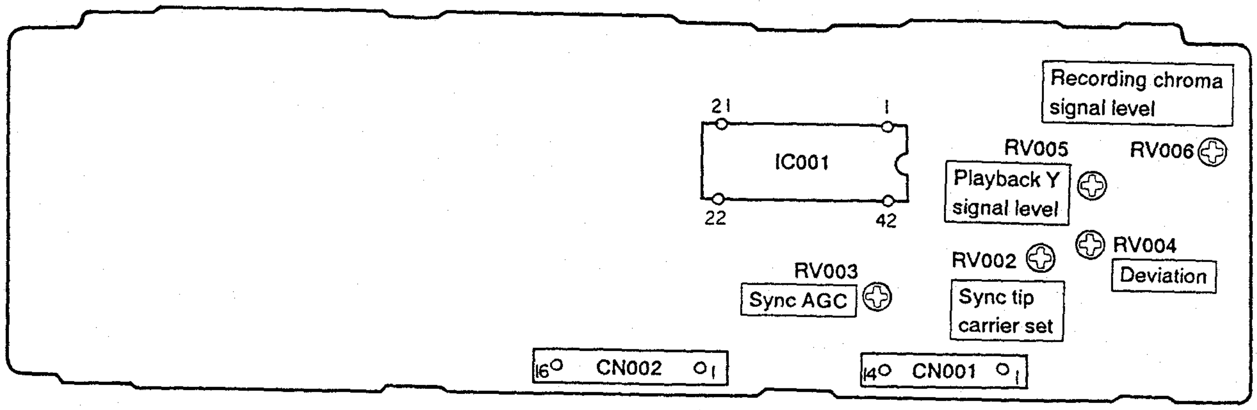
Fig. 7-13.

## 7-6. ARRANGEMENT DIAGRAM FOR ADJUSTMENT PARTS

### MA-119 BOARD (COMPONENT SIDE)


TU701
RV501
Switching position
CN101
1
14
RV201
Recording bias
IC201
2
30
1
29
CN801
1
2
18
19

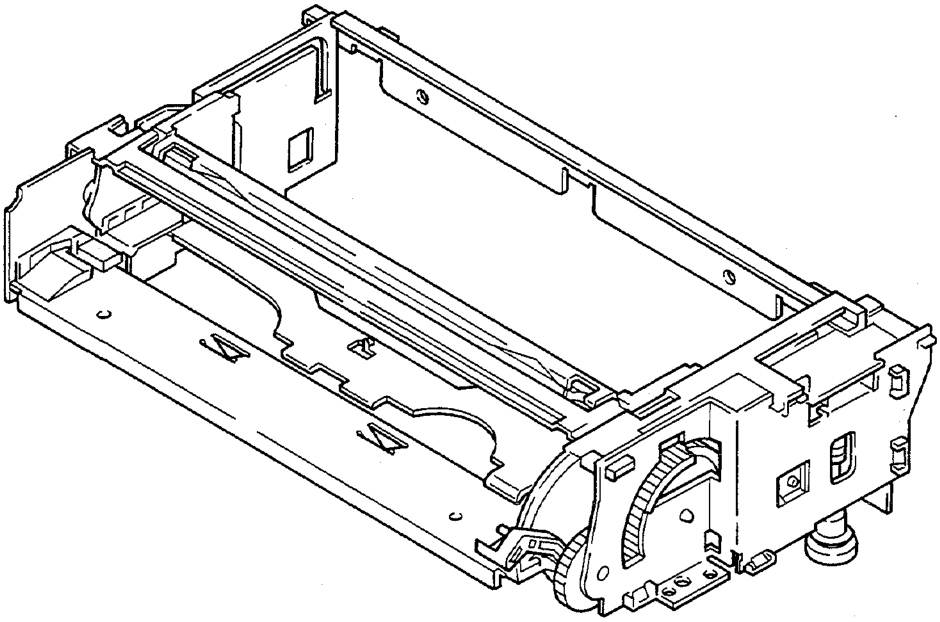
### YC-120 BOARD (COMPONENT SIDE)

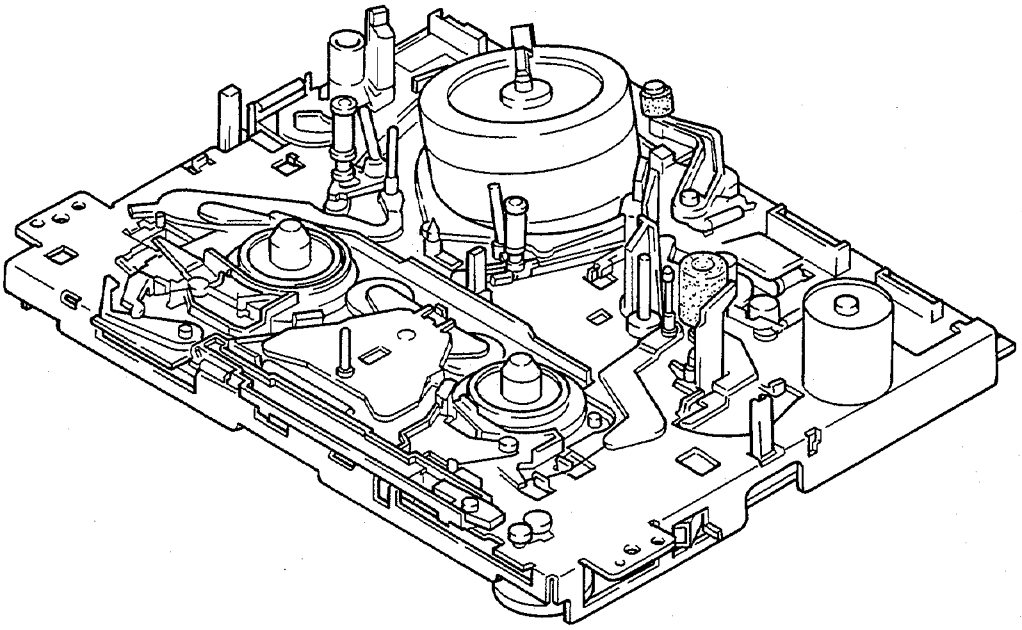

Recording chroma signal level
21
1
IC001
22
42
RV005
RV006
Playback Y signal level
RV004
Deviation
RV002
RV003
Sync AGC
Sync tip carrier set
16
CN002
1
14
CN001
1

# VHS MECHANICAL ADJUSTMENT MANUAL III

● Please use in conjunction with the SERVICE MANUAL.

VIDE-V16179





MICROFILM

VHS VIDEO RECORDER

SONY®

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# 1. PREPARATIONS FOR CHECKS, ADJUSTMENTS AND REPLACEMENT OF THE DECK MECHANISM

**Note :** Refer to "Replacement Method" in the Service manual for instructions on replacing the cabinet and PC boards. DO not perform cassette loading or threading with the VCR positioned upside-down.

## 1-1. LOADING AND UNLOADING VIDEO CASSETTES WITH THE POWER OFF. (Fig. 1-1.)

1) Push the lock plate left and right in the direction of arrow Ⓐ and unlock the claws ❶. At the fully unlocked position, rotate the FL pulley in the direction of arrow Ⓑ. This operation should be done while pushing the tray lock levers, as the roller will be caught by the claws ❷.
2) When unloading, rotate the FL pulley in the direction of arrow Ⓒ.

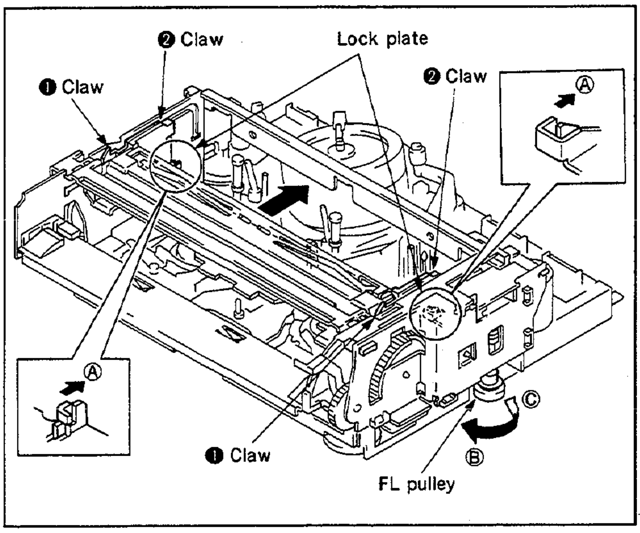


Fig. 1-1

## 1-2. THREADING AND UNTHREADING WITH THE POWER OFF. (Fig. 1-2)

### 1-2-1. Manual Threading and Unthreading

1) When threading tape, turn the loading pulley in the direction of arrow Ⓐ.
2) When unthreading tape, turn the loading pulley in the direction of arrow Ⓑ.

### 1-2-2. Threading and Unthreading Using a Separate Power Source.

1) Threading is performed by applying approx. 10V (500mA) to the power terminal for the loading motor ❶ using a DC stabilized power source.
2) When unthreading, apply the same voltage to the opposite polarity of the power terminal.

**Note :** After threading/unthreading has been completed, the motor should not be continued to be long applied with voltage.

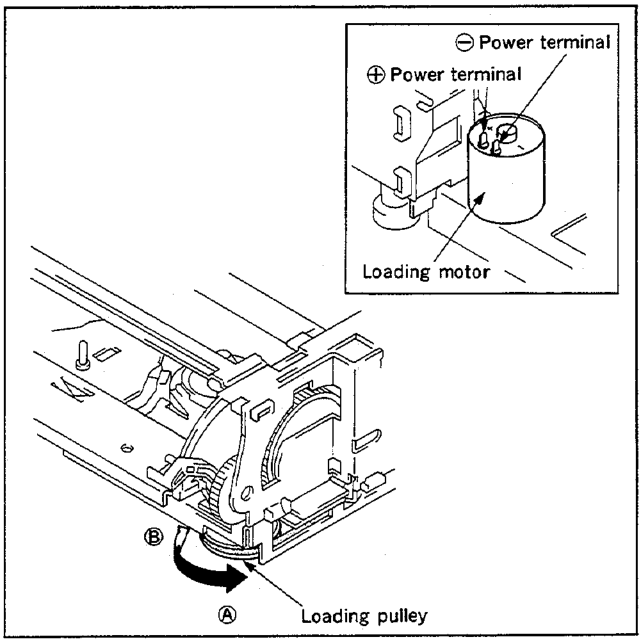


Fig. 1-2

## 1-3. HOW TO COMPLETE THREADING AND ENTER EACH MODE WITH FL ASS'Y REMOVED WHEN POWER IS ON

1) Pull out the power cord from an outlet.
2) Remove the FL ass'y. (Refer to 3-1. replacement of major parts and completely remove the FL belt from the eject pulley.)
3) Allow the F ass'y removed by performing the operation described in 1-1.1).
4) Plug in the power cord and turn the power ON. (This allows you to enter each mode.)

**Note :** It should be remembered that when the REC button is pressed without pressing the PROTECT button, the Eject mode will be entered.

# 2. PERIODICAL INSPECTION AND REPLACEMENT

We recommend performing the following periodical inspections and maintenance in order to ensure that the unit operates in top condition and offers full performance, as well as realizes a long life of the mechanism and tapes.

* Be sure to perform the following maintenance procedures after the unit is repaired (regardless how long the unit has been used.)

## 2-1. CLEANING OF ROTARY HEAD DISK ASS'Y

1) Press deer skin (Jig Ref. No. J-9) previously immersed in cleaning liquid (Jig Ref. No. J-8) lightly to the rotary drum ass'y, and turn the rotary head disk with hand slowly to clean the disk. (Never use the power motor to clean the disk by its rotation.)
2) Never move the deerskin vertically to the head chip when cleaning the disk. Otherwise, the head chip is very likely to be damaged.

## 2-2. CLEANING OF TAPE RUN SYSTEM

1) Clean the surfaces over which tape moves past (tape guide, drum assembly's surface, capstan pin, pinch roller, etc.) by using the deerskin previously immersed in the cleaning liquid and cotton swab.

## 2-3. CLEANING OF DRIVE SYSTEM

1) Clean the drive unit by using cloth moistened with the cleaning liquid.

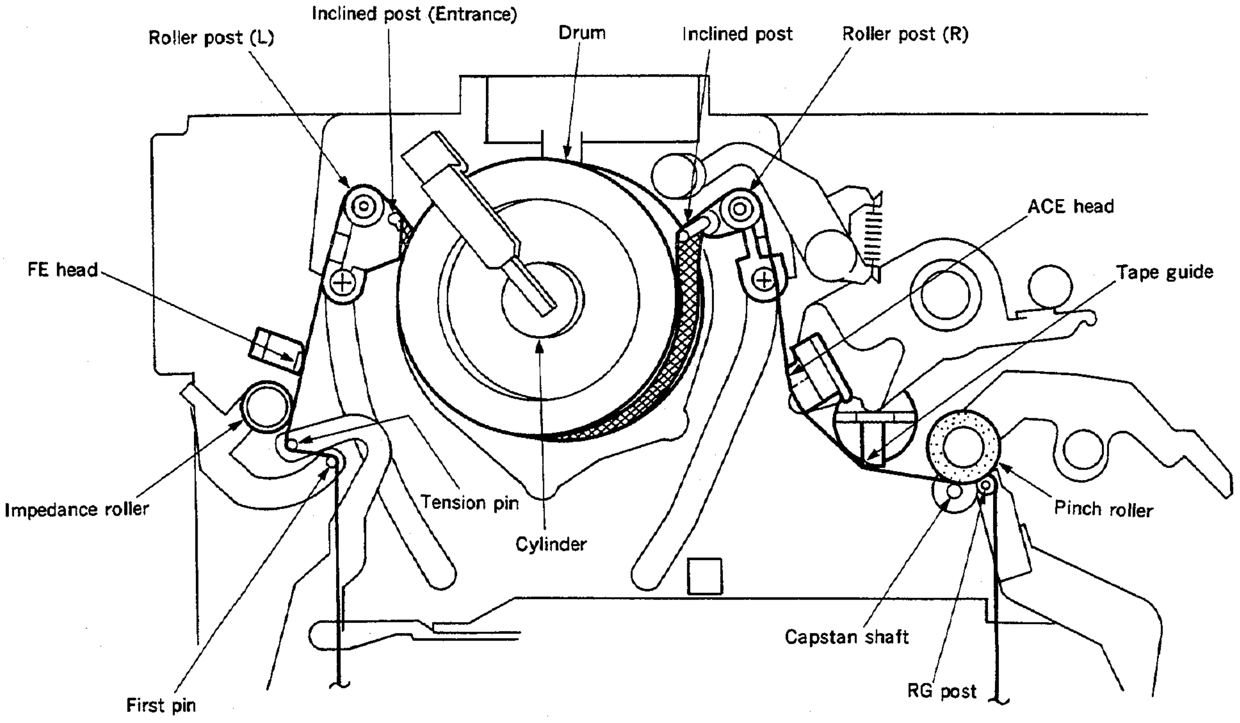

Inclined post (Entrance)
Roller post (L)
Drum
Inclined post
Roller post (R)
ACE head
FE head
Tape guide
Impedance roller
Tension pin
Cylinder
Pinch roller
Capstan shaft
RG post
First pin

Fig. 2-1

**[Notes for Cleaning]**

○ Use cleaning liquid and cotton swab. Be careful not to dirt and damage them.

○ After cleaning the cylinder, be careful not to allow the grounding bar contact to lift. (Fig. A)

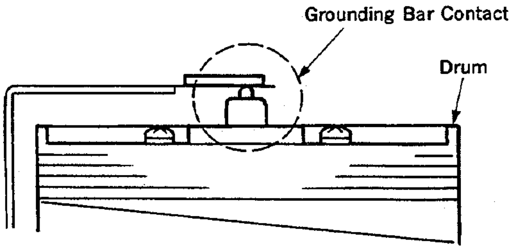

Grounding Bar Contact
Drum

Fig. A

## 2-4. PERIODIC MAINTENANCE

| User Hours<br>Location of Maintenance and Check | | | 500 | 1,000 | 1,500 | 2,000 | 2,500 | 3,000 | 3,500 | 4,000 | 4,500 | 5,000 | Remarks | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Performance Check | Clean tape running surfaces | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Always perform after repair. | |
| | Clean, degauss ACE ass'y | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | |
| | Clean, degauss video disc ass'y | | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | Head life is greatly affected by environment and method of use. | |
| Driving System | Reel belt | | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | Always perform after repair. | |
| Tape Running System | Abnormal noise | | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | Adjust or replace source of abnormal noise. | |
| | Tension torque measurement | Playback | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | Spec : 100±30g•cm | Check according to 4-1-4. (Measured with torque cassette) |
| | | Back tension | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | Spec : 47.5±12.5g•cm | |
| | | REV | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | Spec : 165±25g•cm | |
| | | CUE | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | Spec : 115±45g•cm | |
| | Brake system check | | — | ☆ | — | ☆ | — | ☆ | — | ☆ | — | ☆ | Check according to 4-1-5. | |
| | REC/PB function check | | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | ☆ | Always perform after repair. | |

○ Cleaning ☆ Check

**Note :** Refer to the above items for part replacement when performing an overhaul.

## 2-5. SERVICE TOOLS AND JIGS

| Ref. No. | Description | Part No. | Printing on jig | Remarks |
|---|---|---|---|---|
| J-1 | Master plane | H-7099-279-H | | |
| J-2 | Reel disc height jig | H-7099-038-H | | |
| J-3 | Torque gauge adapter | H-7099-035-H | | |
| J-4 | Torque gauge | H-7099-039-H | | |
| J-5 | 0.93mm Allen wrench | H-7099-202-H | | |
| J-6 | NTSC torque cassette VHT-063S<br>PAL torque cassette VHT-066S | J-6082-011-A<br>J-6082-066-A | | For rewind torque and back tension |
| | NTSC torque cassette VHT-404S<br>PAL torque cassette VHT-404S | J-6082-012-A<br>J-6082-067-A | | For cue/review |
| J-7 | NTSC alignment tape JVC-MH-1<br>PAL alignment tape JVC-MH-2 | H-7099-046-H<br>H-7099-052-H | | |
| | NTSC Hi-Fi alignment tape<br>PAL Hi-Fi alignment tape | H-7099-153-H<br>H-7099-175-H | | |
| J-8 | Cleaning fluid | Y-2031-001-0 | —— | |
| J-9 | Chamois cloth | 2-034-697-00 | —— | Cleaning |
| J-10 | Head degausser | Widely available | —— | Video, audio head degaussing |
| J-11 | Small adjustment mirror (with handle)<br>Small adjustment mirror (mirror only) | J-6080-029-A<br>J-6080-030-1 | SL-5052 | For tape path and tape running adjustment and check |

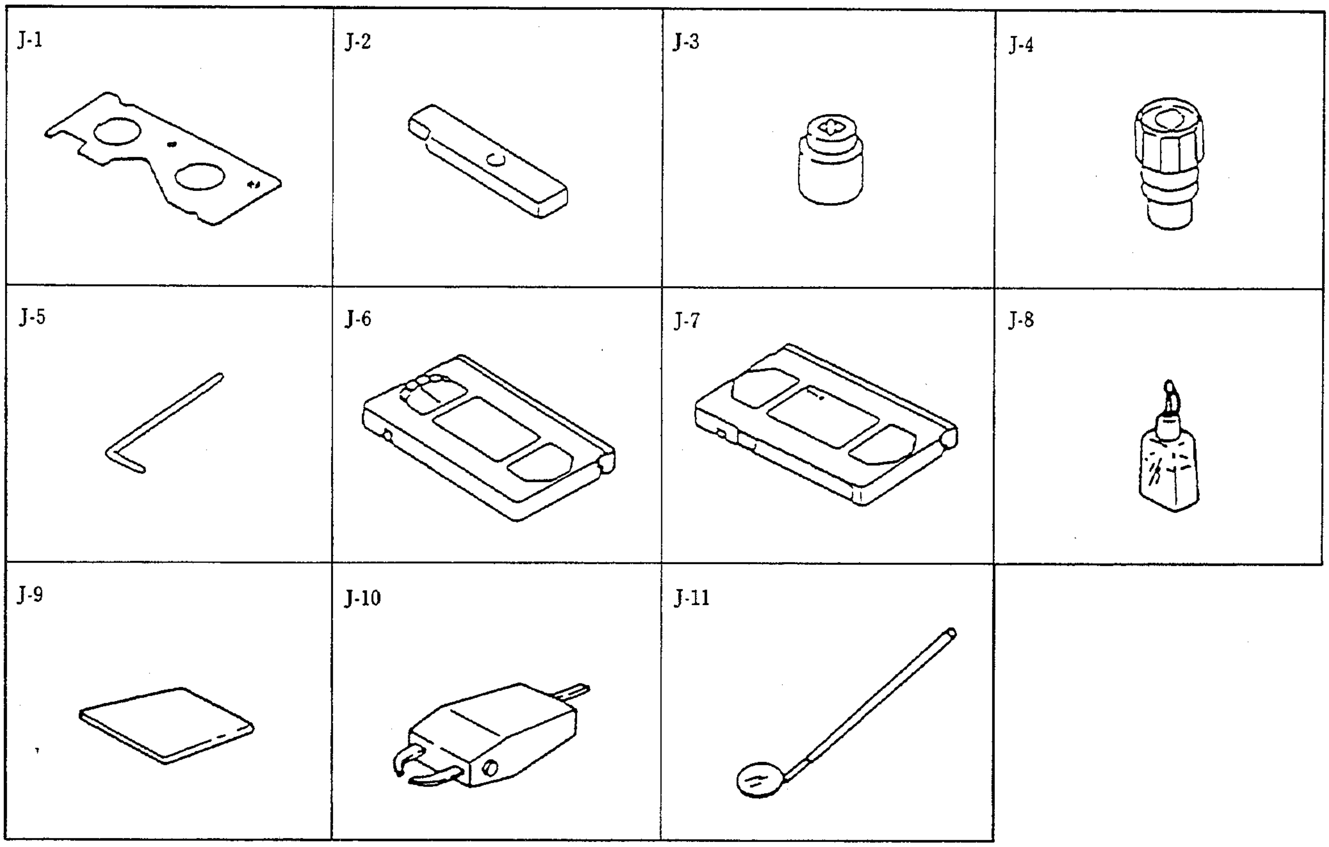


Fig. 2-2. Service tools and jigs

# 3. REPLACEMENT OF MAJOR COMPONENT PARTS OF THE DECK MECHANISM

**Note :**

○ Refer to "Replacement Method" in the Service Guide for replacing the cabinet and PC boards.

○ When mounting parts, reverse the replacement procedure while referring to "Precautions on Mounting Parts".

○ After grease coated parts such as gears are replaced, regrease the replaced part.

○ Do not touch the guides (taped surface) and brake shoe directly with your fingers or grease them, etc.

○ Gears must be mounted so that they mesh with each other.

### 3-1. FL ASS'Y (Fig. 3-1)

1) Remove two screws ❶.
2) Remove the FL bert ❷ and hook the belt on Ⓔ part.
3) Slide the FL ass'y ❸ in the direction of arrow Ⓐ and remove the assembly in the direction of arrow Ⓑ.

**[Precautions on remounting]**

○ When installing the FL ass'y ❸, ensure that Ⓒ part is firmly engaged with Ⓓ part.

○ When installing the FL ass'y ❸, put the FL belt ❷ on the FL pulley Ⓕ.

○ Take care that the FL belt is free from twist and dirt.

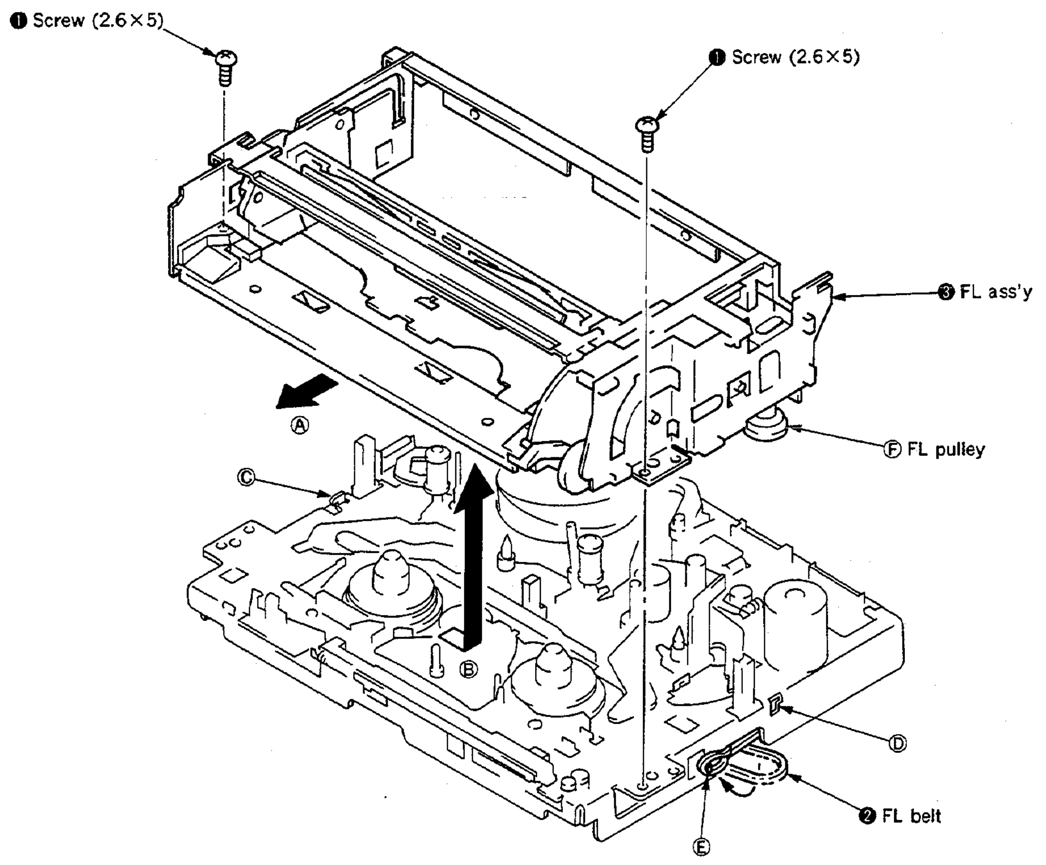


Fig. 3-1

### 3-1-1. Frame Cover, Switch Arm, Worm Wheel, Lift Gear (R) Ass'y, Switch Lever and Lift Lever Ass'y (Fig. 3-2)

1) Remove screw ❶ and remove the collar ❷.
2) Undo six claws ❸ and remove the frame cover ❹ in the arrow direction.
3) Remove the FL PWB B ass'y ❺.
4) Remove the switch arm ❻ and pull out the worm wheel ❼ in the arrow direction.
5) Undo two claws ❽ and remove the switch lever ❾ in the arrow direction.
6) Pull out the left gear (R) ass'y ❿ in the arrow direction.
7) Remove the synchro gear ⓫ from the slot of Ⓔ part.
8) Undo the claw ⓬, then remove the spring ⓮ and the lift lever ass'y ⓭.

**[Precautions on remounting]**

1) Before installing the lift lever ass'y ⓭, first install the spring ⓮ to the assembly. (Fig. B)
2) Engage claw Ⓕ on the lift lever ass'y with Ⓖ part and insert the assembly.
3) After installation, remove the spring from the claw Ⓗ and hook it onto the chassis. (Fig. B)
4) When installing the synchro gear ass'y ⓫ and the lift gear (R) ass'y ❿, align register marks and have teeth engaged. (Fig. A)
5) When installing the lift gear (R) ass'y ❿ and the worm wheel ❼, align register marks and have teeth engaged. (Fig. A)
6) When installing the switch lever ❾, place the switch Ⓘ in between two claws Ⓙ as shown in Fig. C.
7) When installing the switch arm ❻, position the switch arm ❻ with respect to claw Ⓛ on Ⓚ part as shown in Fig. D.
8) The tightening torque for screw ❶ should be 1000g•cm.
9) When installing the frame cover ❹, align the axles of the synchro gear ass'y ⓫, lift gear (R) ass'y ❿ and worm wheel ❼ with their corresponding holes in the frame cover and insert them. (Fig. A)

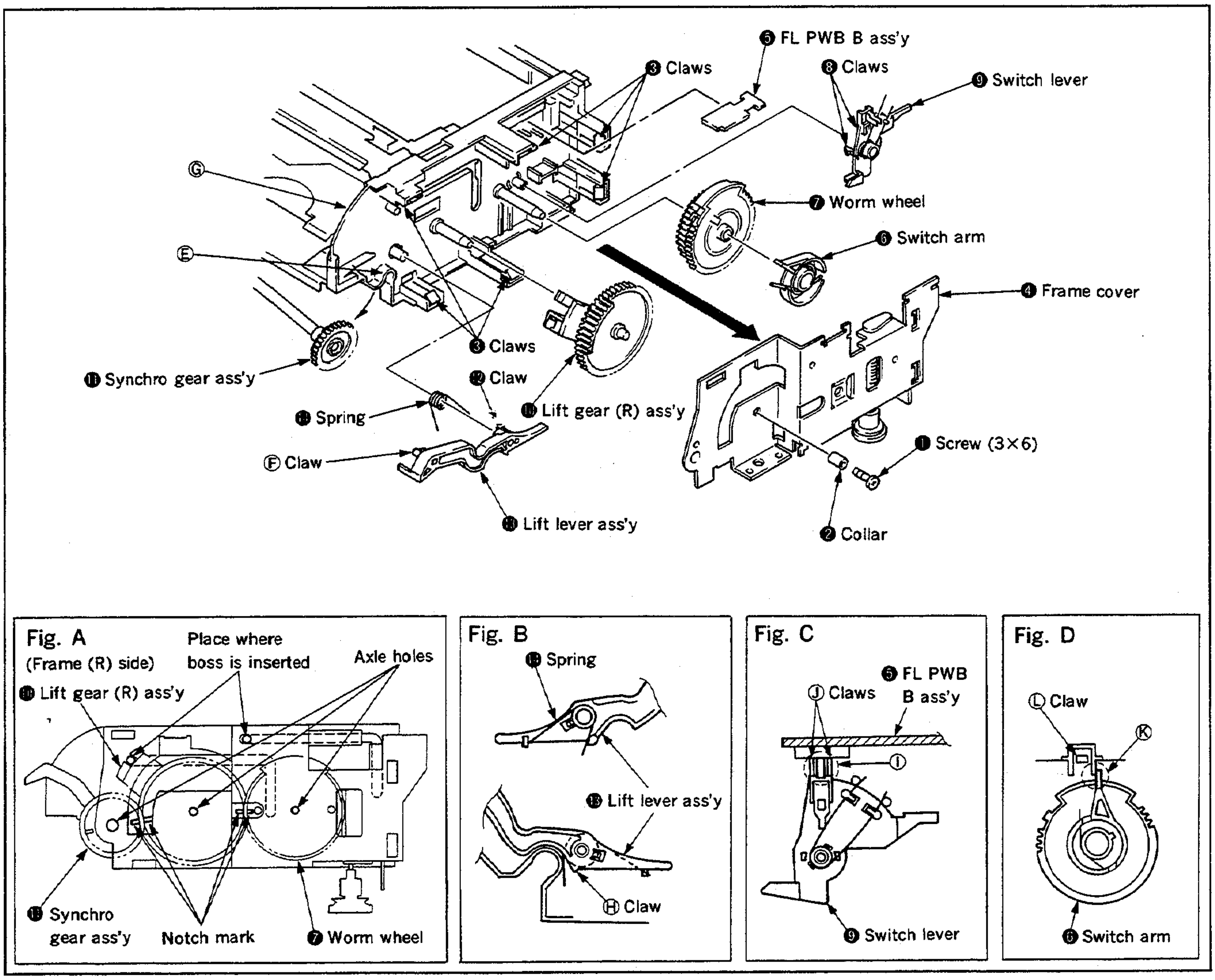

❺ FL PWB B ass'y
❸ Claws
❽ Claws
❾ Switch lever
Ⓖ
❼ Worm wheel
❻ Switch arm
Ⓔ
❹ Frame cover
❸ Claws
⓬ Claw
⓫ Synchro gear ass'y
⓮ Spring
❿ Lift gear (R) ass'y
Ⓕ Claw
❶ Screw (3×6)
⓭ Lift lever ass'y
❷ Collar
Fig. A
(Frame (R) side)
Place where boss is inserted
Axle holes
❿ Lift gear (R) ass'y
⓫ Synchro gear ass'y
Notch mark
❼ Worm wheel
Fig. B
⓮ Spring
⓭ Lift lever ass'y
Ⓗ Claw
Fig. C
❺ FL PWB B ass'y
Ⓙ Claws
Ⓘ
❾ Switch lever
Fig. D
Ⓛ Claw
Ⓚ
❻ Switch arm

Fig. 3-2

### 3-1-2. Lift Gear (L) Ass'y (Fig. 3-3)

1) Place the cassette holder ass'y ❶ in the loading state as instructed in Section 1-1.
2) Undo two claws and pull out the lift gear (L) ass'y ❸.

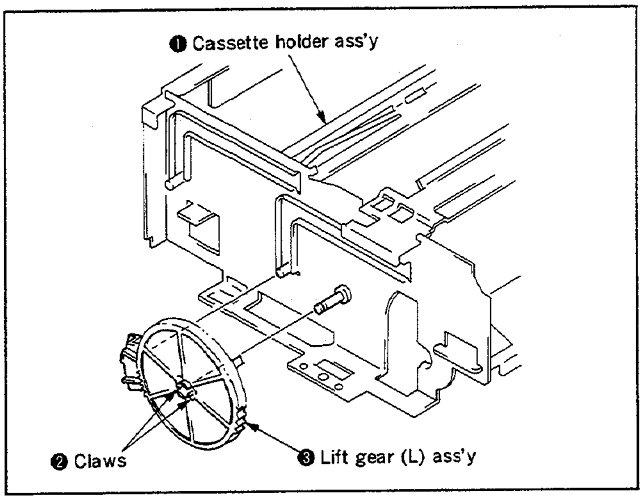

❶ Cassette holder ass'y
❷ Claws
❸ Lift gear (L) ass'y

Fig. 3-3

**[Precautions on remounting]**

○ When installing the synchro gear ass'y and the lift gear (L) ass'y ❸, align register marks and have teeth engaged. (Fig. 3-4)

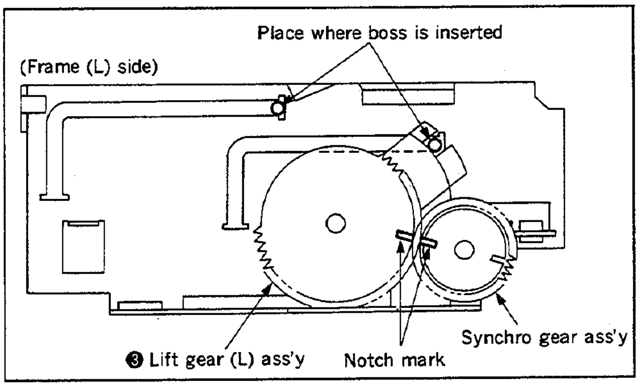

Place where boss is inserted
(Frame (L) side)
❸ Lift gear (L) ass'y
Notch mark
Synchro gear ass'y

Fig. 3-4

### 3-1-3. Upper Plate, Rear Angle, Cassette Guide (L), Cassette Holder Ass'y, Frame (L) Caulking and Synchro Gear Ass'y (Fig. 3-5)

1) Place the cassette holder ass'y ❼ in the loading state as instructed in section 1-1.
2) Remove two screws ❶.
3) Undo two claws ❷ and pull out the upper plate ❸ and the rear angle ❹ from the frame (R) ⓬.
4) Undo the claw ❺ and remove the cassette guide (L) ❻.
5) Remove the cassette holder ass'y ❼.
6) Undo the claw ❼ and pull out the front angle ❾ from the frame R ⓬.
7) Remove the frame (L) caulking ❿ and remove the synchro gear ass'y ⓫ in the arrow direction.

**[Precautions on remounting]**

○ When installing the frame (L) caulking ❿, check to make sure that two bosses are fit into the slot ❿ on the caulk. (Section 3-1-3, Fig 3-5)

○ When installing the frame (R) ⓬, check to make sure that two bosses are fit into the slot ⓬ on the frame. (Section 3-1-3, Fig 3-5)

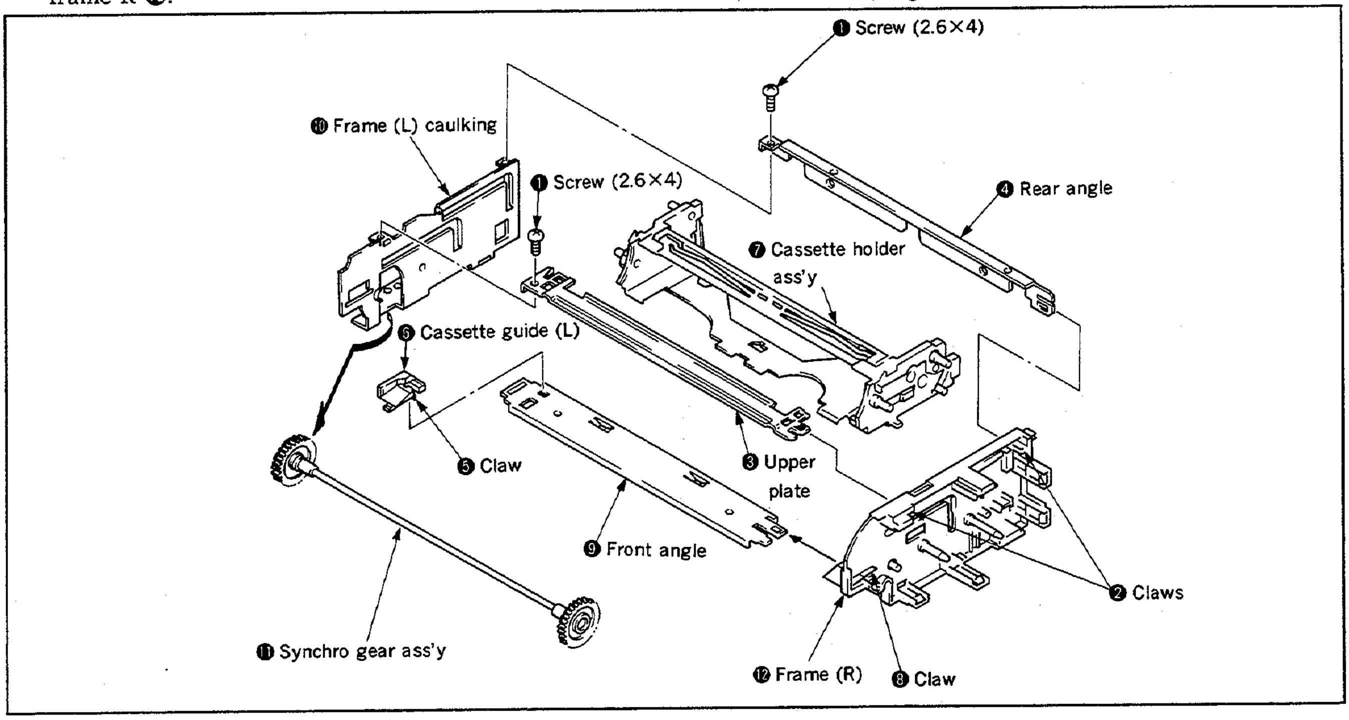

❶ Screw (2.6×4)
❿ Frame (L) caulking
❶ Screw (2.6×4)
❹ Rear angle
❼ Cassette holder ass'y
❻ Cassette guide (L)
❺ Claw
❸ Upper plate
❾ Front angle
❷ Claws
⓫ Synchro gear ass'y
⓬ Frame (R)
❽ Claw

Fig. 3-5

### 3-2. FE BASE ASS'Y (Fig. 3-6)

1) Remove the DM lead wire ❶.
2) Undo two claws ❷ and remove the PWB joiner ❸.
3) Remove screw ❹.
4) Undo two claws ❺ on the sensor and lift in the direction of the arrow Ⓑ.
5) Take off the PWB board ❻ in the direction of the arrow Ⓒ, then lift the board in the direction of arrow Ⓓ and remove it.
6) Remove spring ❼.
7) Align the FE base ass'y ❽ with the slot Ⓕ, then turn the assembly in the arrow direction and remove it.

**[Precautions on remounting]**

○ When installing the FE base ass'y ❽, align the three claws Ⓔ with the slot Ⓕ and insert the assembly fully.

○ When installing the PWB joiner ❸, clean the board pattern side with alcohol or other solvent. be careful not to deform the brush.

○ Keep the impedance roller and FE head surfaces clean. do not touch them directly with fingers or tool.

**[Adjustment after replacement]**

○ Perform tape path adjustments as described in 4-1.

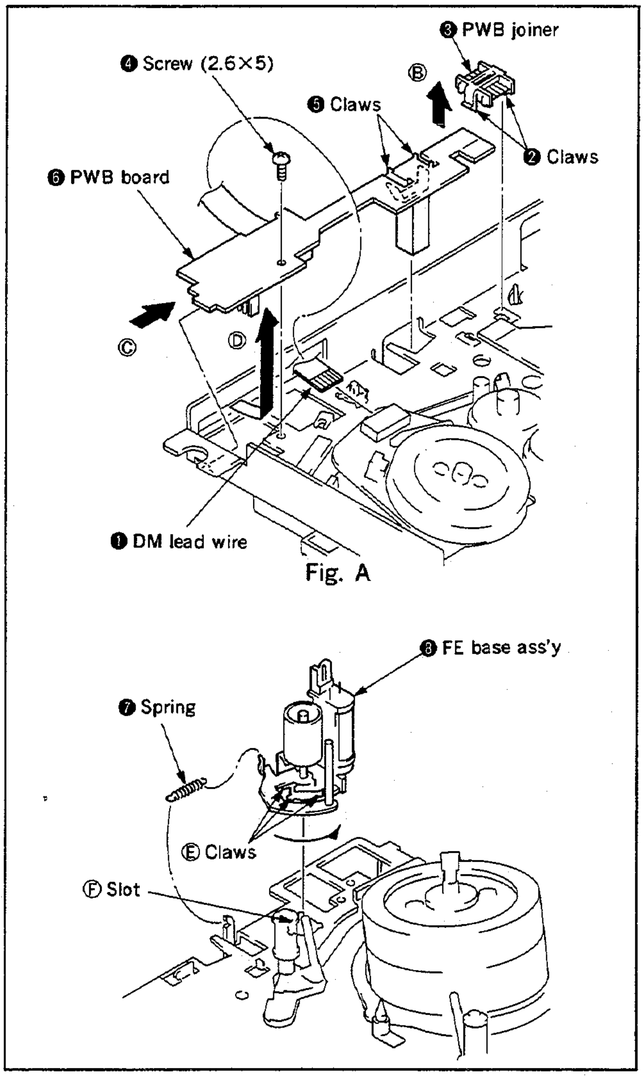

❸ PWB joiner
❹ Screw (2.6×5)
Ⓑ
❺ Claws
❷ Claws
❻ PWB board
Ⓒ
Ⓓ
❶ DM lead wire
Fig. A
❽ FE base ass'y
❼ Spring
Ⓔ Claws
Ⓕ Slot

Fig. 3-6

### 3-3. CLEANING LEVER ASS'Y (Fig. 3-7)

1) Undo two claws ❶ and pull out the cleaning lever ass'y ❷.

**[Precautions on remounting]**

○ When installing the cleaning lever ass'y ❷, ensure that spring Ⓐ is secured with hook Ⓑ (Fig. A).

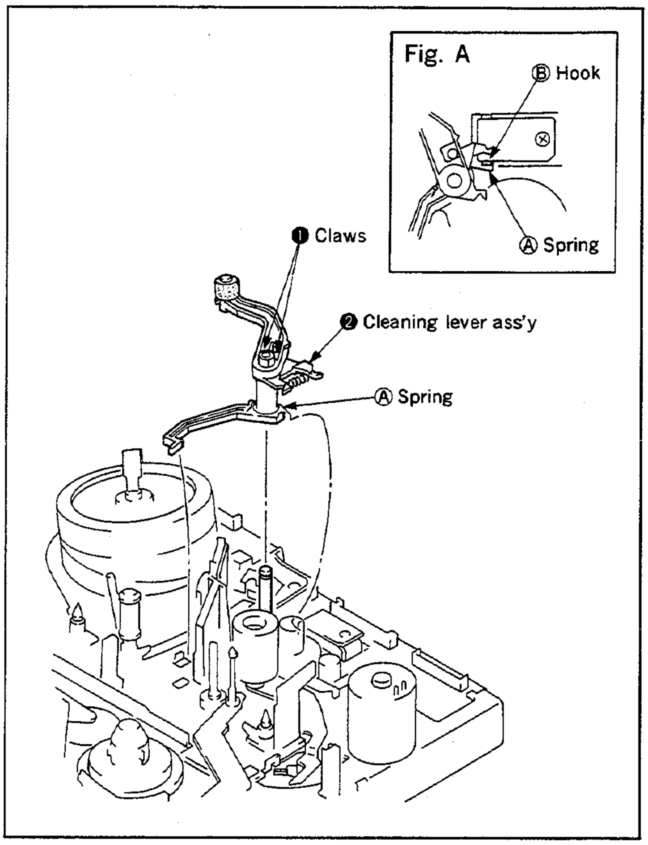


Fig. A
Ⓑ Hook
Ⓐ Spring
❶ Claws
❷ Cleaning lever ass'y
Ⓐ Spring

Fig. 3-7

### 3-4. P ROLLER ARM ASS'Y (Fig. 3-8)

1) Remove the washer ❶.
2) Unfasten the P arm spring ❷ from the hook Ⓑ and pull out the P roller arm ass'y ❸.

**[Precautions on remounting]**

○ Ensure that the P arm spring ❷ is secured with hook Ⓑ (Fig. A).

○ Take care to prevent the P arm spring ❷ from overriding the shaft seat Ⓒ.

○ When installing the P roller arm ass'y ❸, place the assembly on the right side of hook Ⓓ (Fig. A).

○ Removed washers should not be reused.

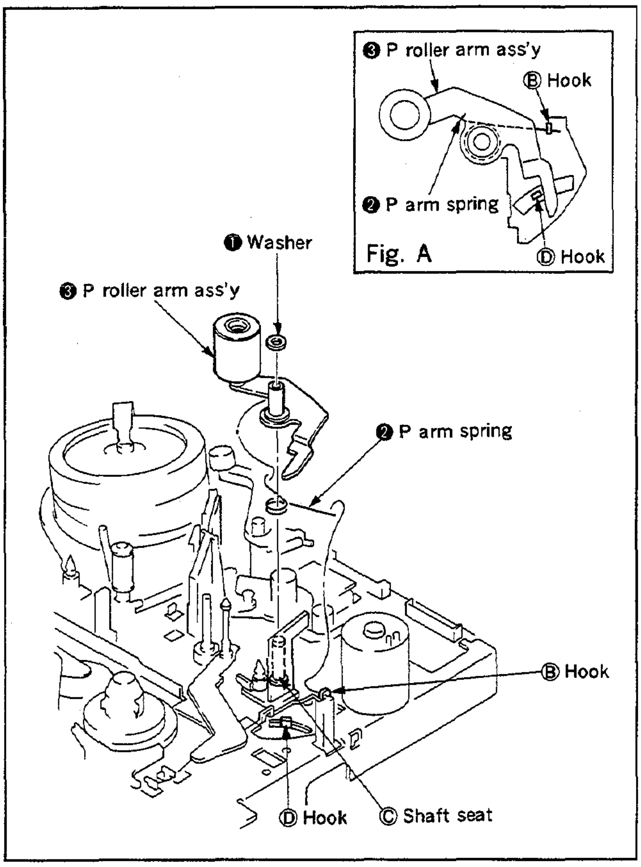

❸ P roller arm ass'y
Ⓑ Hook
❷ P arm spring
Fig. A
Ⓓ Hook
❶ Washer
❸ P roller arm ass'y
❷ P arm spring
Ⓑ Hook
Ⓓ Hook
Ⓒ Shaft seat

Fig. 3-8

### 3-5. AH BASE ASS'Y (Fig. 3-9)

1) Remove the cleaning lever ass'y as instructed in Section 3-3.
2) Remove the ADJ spring ❶.
3) Remove the screw ❷.
4) Pull out the AH base ass'y ❸ and remove the AH base spring ❹.

**[Precautions on remounting]**

○ Ensure that the ADJ spring ❶ is secured with hook Ⓐ.

○ When installing the AH base ass'y ❸, tighten screw ❷ until the AH base ass'y is not in contact with the P roller ass'y.

**[Adjustment after replacement]**

○ Perform tape path adjustments as described in 4-1.

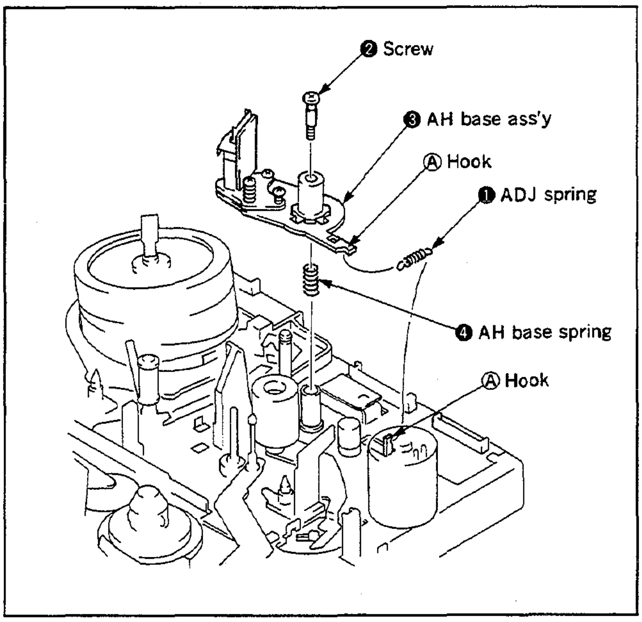

❷ Screw
❸ AH base ass'y
Ⓐ Hook
❶ ADJ spring
❹ AH base spring
Ⓐ Hook

Fig. 3-9

## 3-6. L MOTOR ASS'Y (Fig. 3-10)

1) Remove the loading belt ❶ with it put on the loading pulley Ⓑ. (This is to prevent damage to the belt.)
2) Remove the connector ❷.
3) Remove two screws ❸ and remove the L motor ass'y ❹.

**[Precautions on remounting]**

- ○ When installing the L motor ass'y ❹, put the loading belt ❶ on the loading pulley Ⓑ (Fig. A).
- ○ Install the L motor ass'y ❹ so that the L motor label is on the front side.
- ○ Take care that the loading belt is free from twist and dirt.

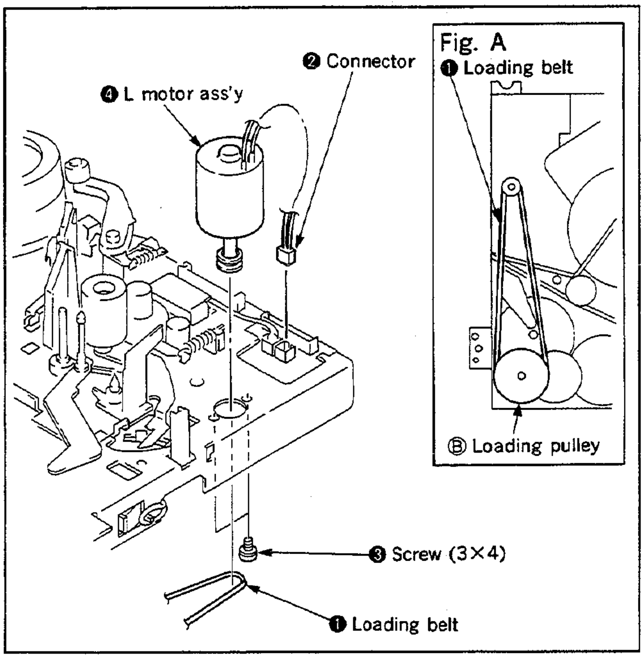

❷ Connector
❹ L motor ass'y
Fig. A
❶ Loading belt
Ⓑ Loading pulley
❸ Screw (3×4)
❶ Loading belt

Fig. 3-10

## 3-7. DRUM ASS'Y (Fig. 3-11)

1) Remove the cleaning lever ass'y as instructed in Section 3-3.
2) Remove the DM lead wire ❶.
3) Remove three screws ❷ and remove the drum ass'y ❸ in the arrow direction.

**[Precautions on remounting]**

- ○ Do not to touch the tape contact surfaces of the head chip Ⓐ and drum ass'y ❸ directly by fingers and tooling.
- ○ When tightening screws ❷, take care to prevent screws from projecting and slanting.
- ○ Take care to avoid bent and damage of the DM lead wire ❶.
- ○ When inserting the lead wire terminal Ⓑ into the board connector Ⓒ, ensure that the terminal is firmly inserted.
- ○ The tightening torque for screw ❷ should be 7500g•cm.

**[Adjustment after replacement]**

- ○ Perform tape path adjustments as described in 4-1.

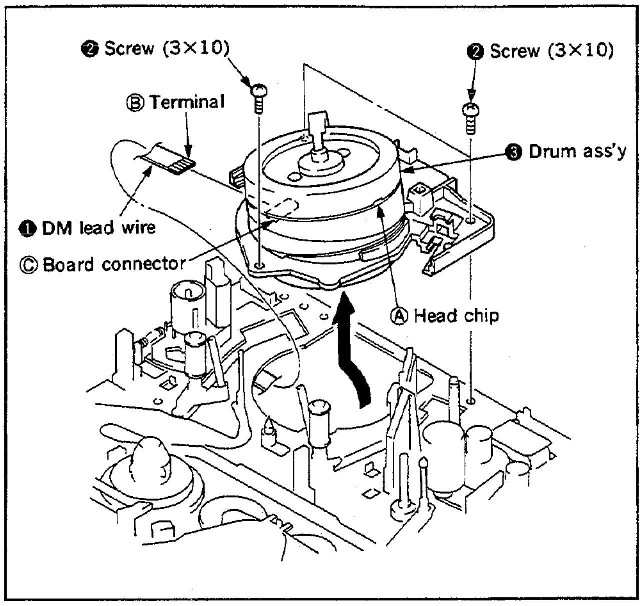

❷ Screw (3×10)
❷ Screw (3×10)
Ⓑ Terminal
❸ Drum ass'y
❶ DM lead wire
Ⓒ Board connector
Ⓐ Head chip

Fig. 3-11

### 3-8. L BLOCK (L, R) ASSEMBLIES, ROLLER POST (Fig. 3-12)

1) Remove screw ❶ and remove the loading boss ❷.
2) Slide the L block (L) ass'y ❸ in the direction of arrow Ⓐ and remove the assembly in the direction of arrow Ⓑ.
3) Remove the screw ❹ and remove the loading boss ❺.
4) Slide the L block (R) ass'y ❻ in the direction of arrow Ⓒ and remove the assembly in the direction of arrow Ⓓ.
5) When removing the roller post ❼, loosen the screw ❽, then turn the post in the direction of arrow Ⓔ and pull out it.

**[Precautions on remounting]**

○ Keep clean the tape contact surface of the roller post ❼. Do not touch the contact surface directly by fingers and tooling.

**[Adjustment after replacement]**

○ Perform tape path adjustments as described in 4-1.

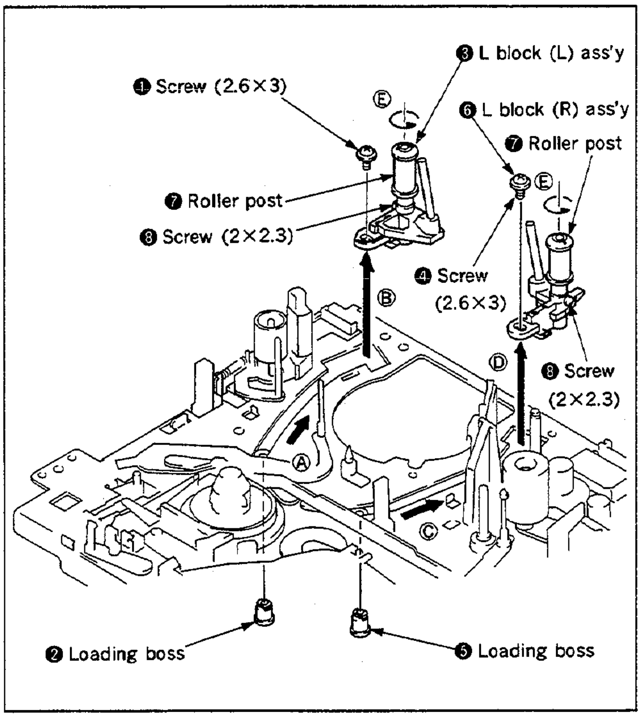

❸ L block (L) ass'y
❶ Screw (2.6×3)
Ⓔ
❻ L block (R) ass'y
❼ Roller post
❼ Roller post
Ⓔ
❽ Screw (2×2.3)
❹ Screw (2.6×3)
Ⓑ
Ⓓ
❽ Screw (2×2.3)
Ⓐ
Ⓒ
❷ Loading boss
❺ Loading boss

Fig. 3-12

### 3-9. TENSION ARM ASS'Y, BT BAND ASS'Y (Fig. 3-13)

1) Remove the BT pull up plate as instrcted in section 3-18.
2) Remove the BT spring ❶.
3) Remove the screw ❷.
4) Remove two claws ❸, then push the S soft brake ❹ in the direction of arrow Ⓐ and pull out the tension arm ass'y ❺.
5) Turn the claw ❻ in the direction of arrow Ⓑ and remove the BT band ass'y ❼.

**[Precautions on remounting]**

○ Before installing the tension arm ass'y ❺, install the BT band ass'y ❼ to the tension arm ass'y ❺.

○ When installing the tension arm ass'y ❺, ensure that the arm shaft Ⓒ is firmly fit into the arm metal Ⓓ.

○ When installing the BT band ass'y ❼, insert the projection Ⓔ into the hole Ⓕ.

**[Adjustment after replacement]**

○ Perform tape path adjustments as described in 4-1.

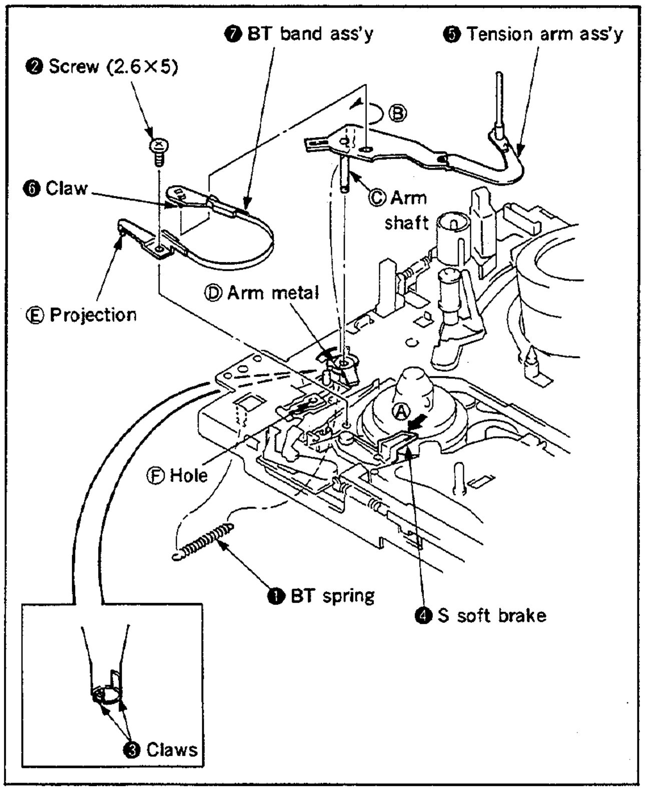

❼ BT band ass'y
❺ Tension arm ass'y
❷ Screw (2.6×5)
Ⓑ
❻ Claw
Ⓒ Arm shaft
Ⓓ Arm metal
Ⓔ Projection
Ⓐ
Ⓕ Hole
❶ BT spring
❹ S soft brake
❸ Claws

Fig. 3-13

## 3-10. RG ARM ASS'Y (Fig. 3-14)

1) Unfasten two claws ❶ and pull out the RG arm ass'y ❷.

**[Precautions on remounting]**

○ When installing the RG arm ass'y ❷, fit the projection Ⓐ on the right side of the spring Ⓑ.

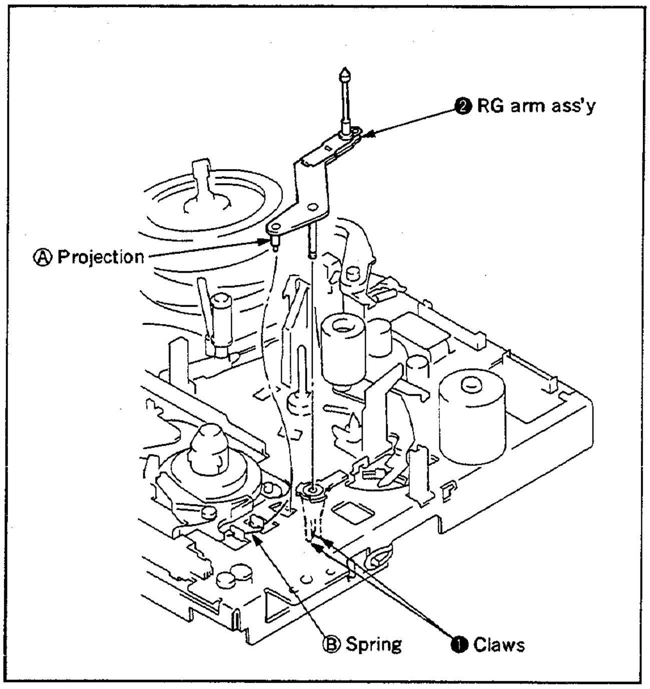

❷ RG arm ass'y
Ⓐ Projection
Ⓑ Spring
❶ Claws

Fig. 3-14

## 3-11. SS BRAKE ARM, TS BRAKE ARM, REEL TABLE ASS'Y (Fig. 3-15)

1) Remove the washer ❶.
2) Unfasten the arm spring ❸ from the hook ❷ and pull out the SS brake arm ❹.
3) Pull out the reel table ass'y ❺ and pull out the washer ❻.
4) Remove the washer ❼.
5) Unfasten the arm spring ❾ from the hook ❽ and pull out the TS brake arm ❿.
6) Push the brake arm (R) ass'y ⓫ in the direction of arrow Ⓐ and pull out the reel table ass'y ⓬. Then pull out the washer ⓭.

**[Precautions on remounting]**

○ Do not touch the felt surface of the TS brake arm ❿ directry with fingers or tool.

○ Removed washers should not be reused.

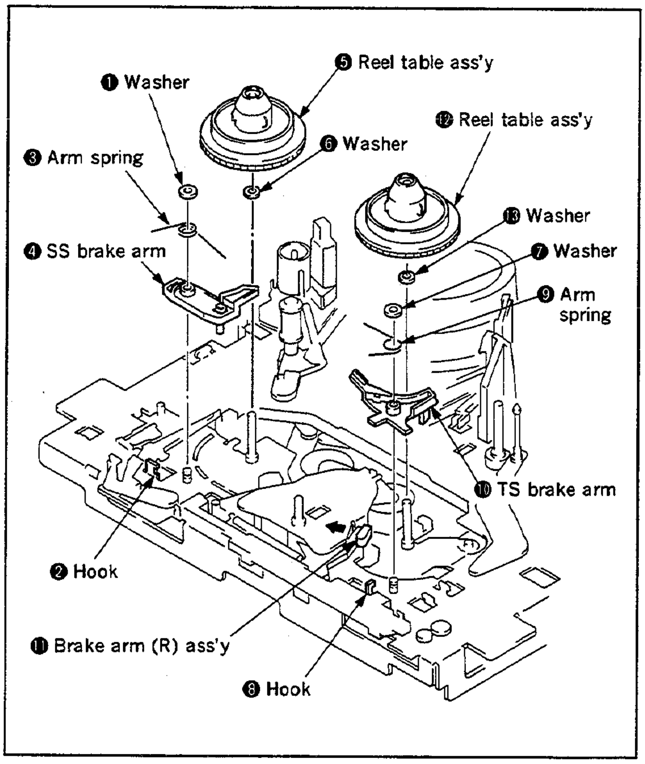

❺ Reel table ass'y
❶ Washer
⓬ Reel table ass'y
❻ Washer
❸ Arm spring
⓭ Washer
❹ SS brake arm
❼ Washer
❾ Arm spring
❿ TS brake arm
❷ Hook
⓫ Brake arm (R) ass'y
❽ Hook

Fig. 3-15

## 3-12. SUB PLATE ASS'Y, BRAKE (L, R) ASS'Y (Fig. 3-16)

1) Remove the drive belt ❶.
2) Remove two screws ❷.
3) Remove the brake arm spring ❸.
4) Raise the sub plate ass'y ❹ in the direction of arrow Ⓑ and unfasten the claw ❺, then lift the assembly in the direction of arrow Ⓒ to remove it.
5) Remove the brake (L) ass'y ❻ and brake (R) ass'y ❼.

**[Precautions on remounting]**

- ○ When installing the sub plate ass'y ❹, ensure that the drive belt ❶ is firmly put on the pulley groove Ⓓ (Fig. A).
- ○ Be careful not to damage the gears.
- ○ Take care that the drive belt ❶ is free from twist or dirt.

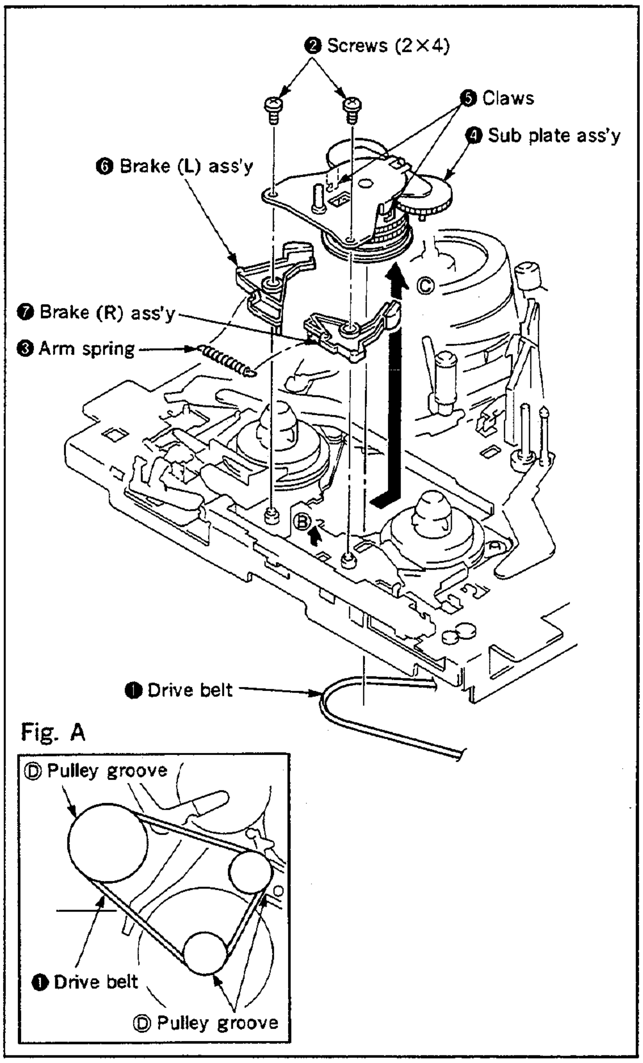

❷ Screws (2×4)
❺ Claws
❹ Sub plate ass'y
❻ Brake (L) ass'y
Ⓒ
❼ Brake (R) ass'y
❸ Arm spring
Ⓑ
❶ Drive belt
Fig. A
Ⓓ Pulley groove
❶ Drive belt
Ⓓ Pulley groove

Fig. 3-16

## 3-13. BK SLIDE PLATE, REC ARM, REC SWITCH ARM (Fig. 3-17)

1) Remove the parts as instructed in Sections 3-9 and 3-12.
2) Unfasten two claws ❶ and remove the REC switch arm ❷.
3) Remove the arm spring ❸, then turn the REC arm ❹ in the direction of arrow Ⓒ and remove the arm.
4) Remove the BK trigger hook ❺.
5) Remove the slide spring ❻.
6) Undo the BK slide plate ❼ from the projection Ⓖ, then slide the plate in the direction of arrow Ⓓ and remove it.

**[Precautions on remounting]**

- ○ Take care not to wrongly fit the long and short portions of the arm spring ❸ (Fig. B).
- ○ Ensure that the REC switch arm ❷ is firmly fit on the REC switch (Fig. A).
- ○ When installing the BK slide plate ❼, insert the projections Ⓖ and Ⓙ into the holes Ⓗ and Ⓘ respectively and fit the claw Ⓔ into the slots Ⓕ, then slide the plate.
- ○ Be careful not to damage the gears.

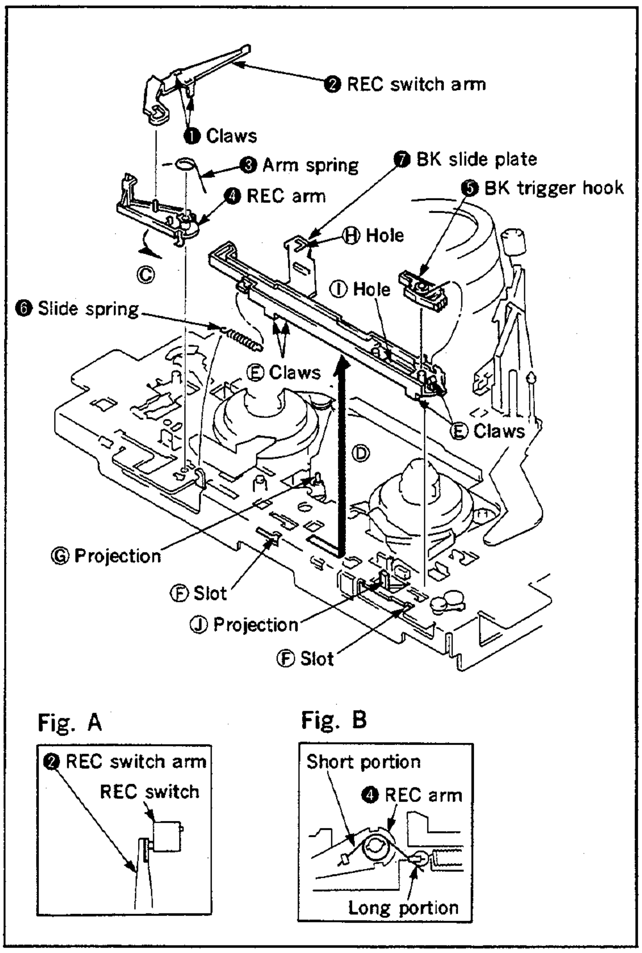

❷ REC switch arm
❶ Claws
❸ Arm spring
❹ REC arm
❼ BK slide plate
❺ BK trigger hook
Ⓗ Hole
Ⓘ Hole
Ⓒ
❻ Slide spring
Ⓔ Claws
Ⓔ Claws
Ⓓ
Ⓖ Projection
Ⓕ Slot
Ⓙ Projection
Ⓕ Slot
Fig. A
❷ REC switch arm
REC switch
Fig. B
Short portion
❹ REC arm
Long portion

Fig. 3-17

### 3-14. MOTOR (Fig. 3-18)

1) Remove the drive belt as instructed in Section 3-12.
2) Unfasten two claws ❶ and lift the CM lead connector ❷ in the arrow direction.
3) Pull out the terminal ❸ and remove the CM lead connector ❷.
4) Remove three screws ❹.
5) Remove the motor ❺.

**[Precautions on remounting]**

- ○ Keep clean the contact Ⓐ of the flexible board.
- ○ Insert the CM lead connector terminal ❸ fully with care not to damage it.
- ○ When tightening screws ❹, use the DD motor stand to firmly tighten the screws so that screws may not project and slant. (Use the screw tightening torque of 5500g•cm.)
- ○ Be careful not to contaminate the DD capstan.

**[Adjustment after replacement]**

- ○ Perform tape path adjustments as described in 4-1.

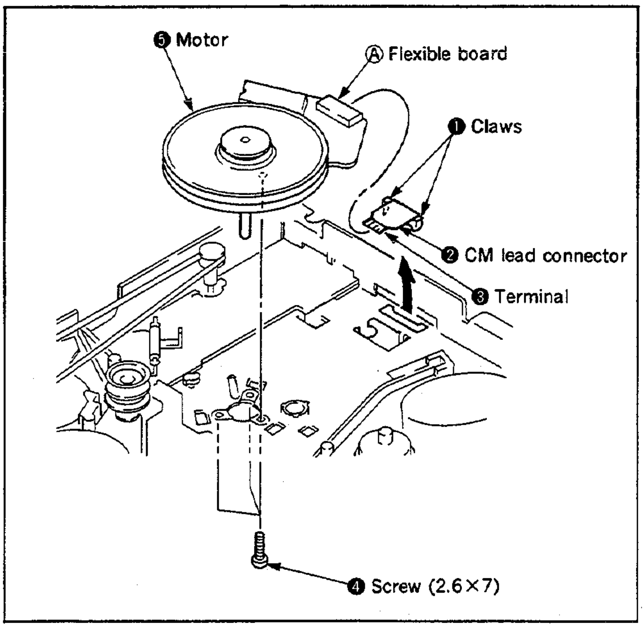

❺ Motor
Ⓐ Flexible board
❶ Claws
❷ CM lead connector
❸ Terminal
❹ Screw (2.6×7)

Fig. 3-18

### 3-15. LOADING PULLEY, LOADING GEAR (Fig. 3-19)

1) With the loading belt put on the loading pulley ❸, unfasten two claws ❷ and remove the loading pulley ❸. (This is to prevent damage to the belt.)
2) Unfasten two claws ❹ and remove the loading gear ❺.

**[Precautions on remounting]**

- ○ When installing the loading pulley ❸, ensure that claws ❷ are firmly fastened (Fig. A).
- ○ When installing the loading gear ❺, ensure that claws ❹ are firmly fastened (Fig. B).
- ○ If the loading pulley ❸ is applied with screw lock, remove the screw lock and then remove the pulley. In this case, the removed pulley should not be reused. (When replacing, there is no need of applying screw lock.)

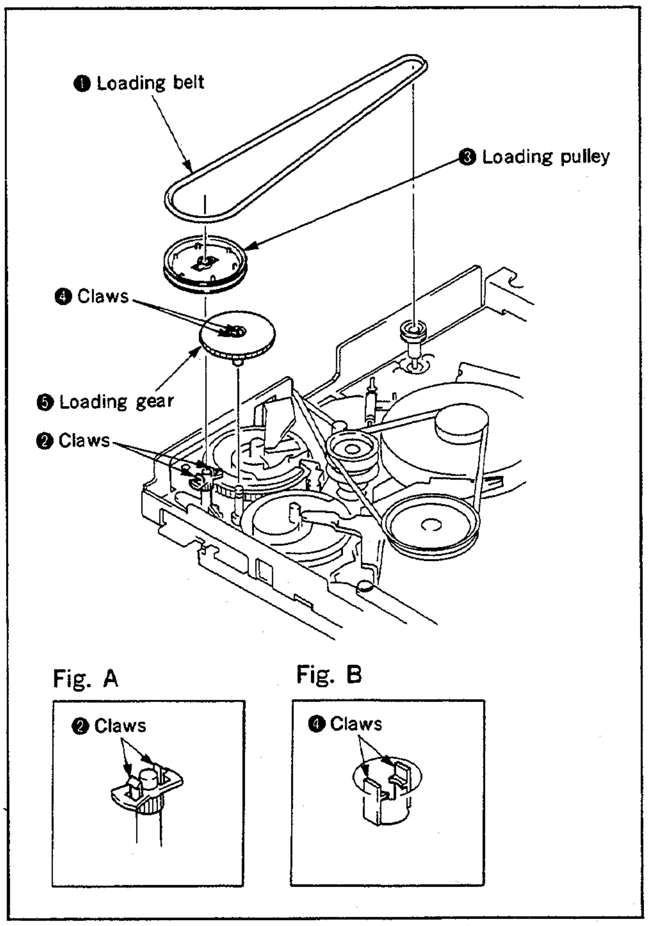

❶ Loading belt
❸ Loading pulley
❹ Claws
❺ Loading gear
❷ Claws
Fig. A
❷ Claws
Fig. B
❹ Claws

Fig. 3-19

## 3-16. RE PULLEY ASS'Y, EJECT PULLEY (Fig. 3-20).

1) Remove the loading belt and drive belt as instructed in Sections 3-12 and 3-15.
2) Remove the FL belt ❶.
3) Remove the washer ❷ and pull out the RE pulley ass'y ❸.
4) Remove the washer ❹ and pull out the eject pulley ❺ and breaker spring ❻.

**[Precautions on remounting]**

○ When installing the eject pulley, ensure that the FL belt ❶ is firmly put on the eject pulley (Fig. A).

○ Take care not to allow twist and contamination of the FL belt ❶.

○ Removed washers should not be reused.

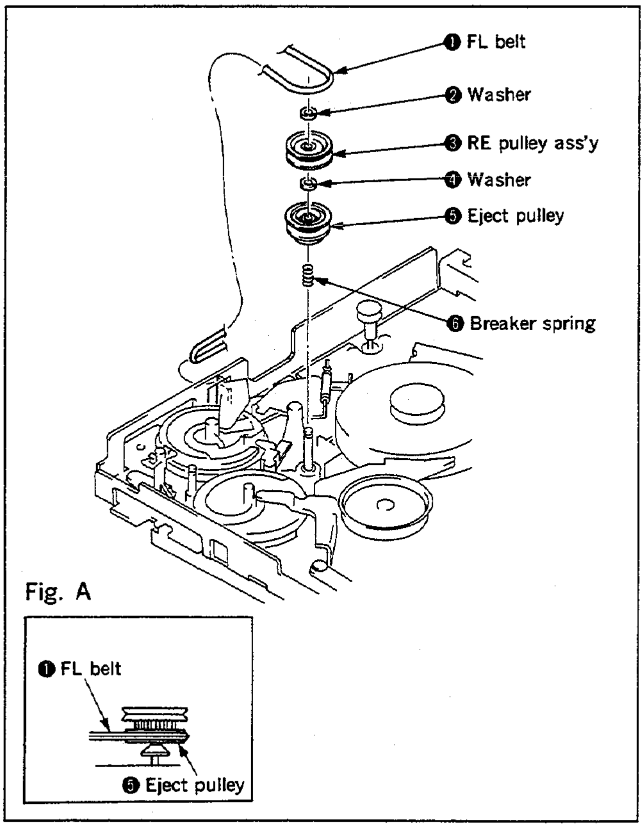

❶ FL belt
❷ Washer
❸ RE pulley ass'y
❹ Washer
❺ Eject pulley
❻ Breaker spring
Fig. A
❶ FL belt
❺ Eject pulley

Fig. 3-20

## 3-17. BT PULL UP PLATE, BT LEVER, L JOINT PLATE CAULKING AND M SLIDE PLATE (Fig. 3-21)

1) Remove the drive belt as instructed in Section 3-12.
2) Remove the washer ❶.
3) Pull out the BT pull up plate ❷.
4) Remove the plate spring ❸.
5) Pull out the BT lever ❹.
6) Remove the screw ❺ and remove the L gear plate collar ❻.
7) Remove the L lever stopper ❼.
8) Pull out the L joint caulking ❽ and remove the cam roller ❾.

**[Precautions on remounting]**

○ When installing the L joint caulking ❽ to the L cam gear Ⓓ, align the cam roller ❶ with the slot Ⓔ and insert the roller (Fig. A).

○ When tightening screw ❺, take care to prevent the screw from projecting and slanting.

○ When installing the L joint caulking ❽, align the notch mark of the T loading gear (L) ass'y Ⓖ with the notch mark of the joint and engage the teeth (Fig. B).

○ Ensure that the projection Ⓗ is completely inserted into the lever stopper ❼ and that the stopper is not reversely installed (Fig. C).

○ Ensure that the plate spring ❸ is secured with the hook ❶.

○ When installing the BT pull up plate ❷, ensure that the projection Ⓚ is firmly inserted into the hole Ⓙ.

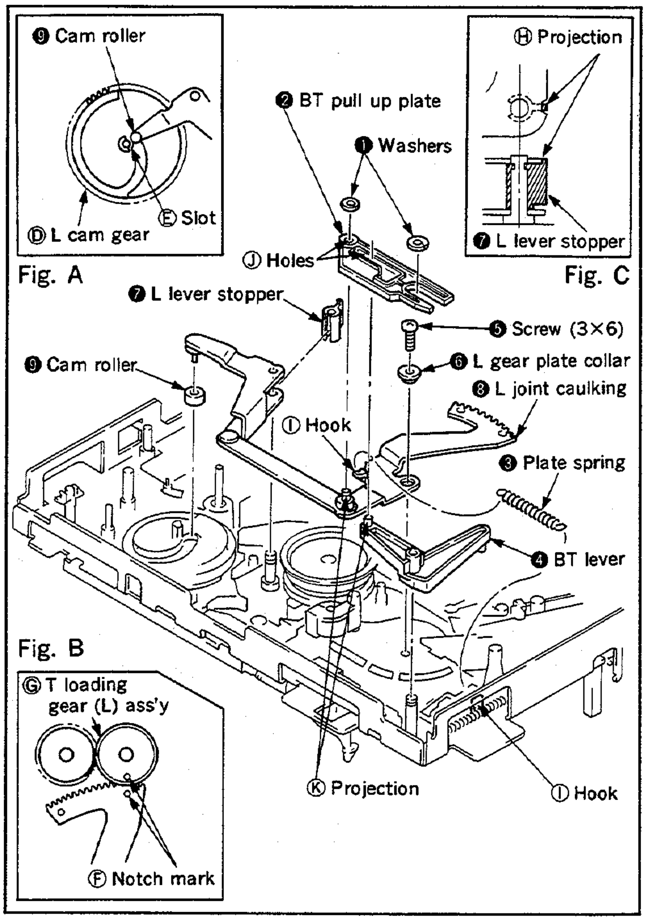

❾ Cam roller
Ⓓ L cam gear
Ⓔ Slot
Fig. A
❷ BT pull up plate
❶ Washers
Ⓙ Holes
Ⓗ Projection
❼ L lever stopper
Fig. C
❼ L lever stopper
❺ Screw (3×6)
❾ Cam roller
❻ L gear plate collar
❽ L joint caulking
Ⓘ Hook
❸ Plate spring
❹ BT lever
Fig. B
Ⓖ T loading gear (L) ass'y
Ⓕ Notch mark
Ⓚ Projection
Ⓘ Hook

Fig. 3-21

## 3-18. PRESSURE PLATE ASS'Y, BREAKER ARM, P CAM GEAR AND MODE SWITCH (Fig. 3-22)

1) Remove the loading pulley and loading gear as instructed in Section 3-15.
2) Remove the FL belt as instructed in Section 3-16.
3) Turn the L cam gear ❶ in the arrow direction and place the pressure plate ass'y ❷ in threading state.
4) Remove the washer ❸ and pull out the breaker arm ❹.
5) Remove the washer ❺ and pull out the pressure plate ass'y ❷.
6) Unfasten two claws ❻ and pull out the P cam gear ❼.
7) Remove solder Ⓚ and pull out the mode switch ❽.

**[Precautions on remounting]**

- ○ When installing the mode switch ❽, align with the hole Ⓒ in the chassis.
- ○ When installing the P cam gear ❼ and mode switch ❽, align the projection Ⓓ on the mode switch with the slot Ⓔ in the P cam gear (Fig. B).
- ○ When installing the P cam gear ❼, as illustrated in Fig. A, align the parts Ⓕ, Ⓖ, Ⓗ, Ⓘ and Ⓙ in line.
- ○ When installing the mode switch ❽, push the switch at its top and solder the switch carefully to prevent its lift.
- ○ Removed washers should not be reused.

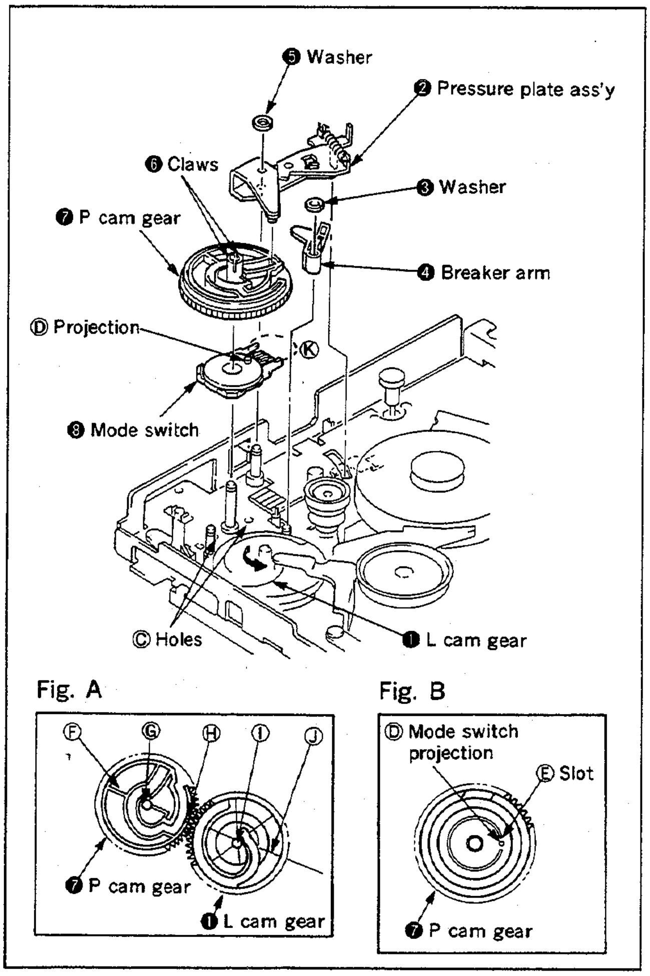

❺ Washer
❷ Pressure plate ass'y
❻ Claws
❸ Washer
❼ P cam gear
❹ Breaker arm
Ⓓ Projection
Ⓚ
❽ Mode switch
Ⓒ Holes
❶ L cam gear
Fig. A
Fig. B
Ⓕ
Ⓖ
Ⓗ
Ⓘ
Ⓙ
❼ P cam gear
❶ L cam gear
Ⓓ Mode switch projection
Ⓔ Slot
❼ P cam gear

Fig. 3-22

## 3-19. L CAM GEAR, M SLIDE PLATE, RF GEAR ARM ASS'Y (Fig. 3-23)

1) Remove the parts as instructed in Sections 3-11, 3-13, 3-15, 3-16, 3-17 and 3-18.
2) Unfasten two claws ❶ and pull out the L cam gear ❷.
3) Remove the M lever ❸.
4) Slide the M slide plate ❹ in the direction of arrow Ⓒ and remove the plate.
5) Remove two claws ❺ and pull out the RF gear arm ass'y ❻.

**[Precautions on remounting]**

- ○ When installing the M slide plate ❹, push the C brake lever ❼ in the direction of arrow Ⓖ and install.
- ○ When installing the M slide plate ❹, fit the claw Ⓓ into the slot Ⓔ and slide the plate.
- ○ When installing the L cam gear ❷, align the projections Ⓕ of the M lever and BK release arm (Fig. B).
- ○ When installing the M lever ❸, the CB return lever Ⓗ should be oriented toward the direction as specified in Fig. B.

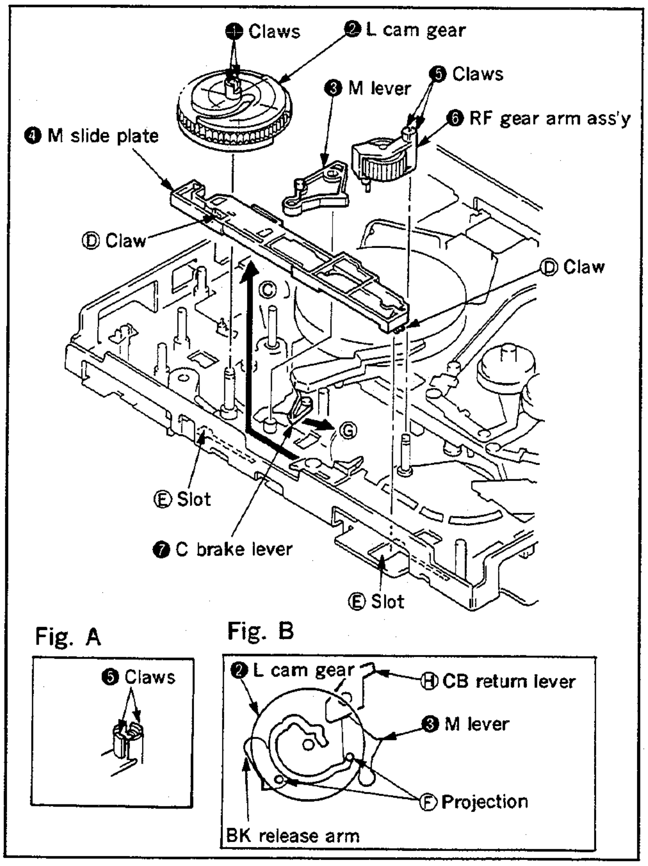

❶ Claws
❷ L cam gear
❸ M lever
❺ Claws
❻ RF gear arm ass'y
❹ M slide plate
Ⓓ Claw
Ⓓ Claw
Ⓒ
Ⓖ
Ⓔ Slot
❼ C brake lever
Ⓔ Slot
Fig. A
❺ Claws
Fig. B
❷ L cam gear
Ⓗ CB return lever
❸ M lever
Ⓕ Projection
BK release arm

Fig. 3-23

## 3-20. T LOADING GEAR (L, R) ASS'Y (Fig. 3-24)

1) Remove the washer ❶.
2) Unfasten two claws ❷ and pull out the T loading gear (L) ass'y ❸.
3) Remove the spring ❹ and pull out the T loading arm ❺.
4) Remove the washer ❻.
5) Unfasten two claws ❼ and pull out the T loading gear (R) ass'y ❽.
6) Remove the spring ❾ and pull out the T loading arm ❿.

**[Precautions on remounting]**

- When installing the T loading gear (L, R) ASS'Y ❸ and ❽, align the notch marks and secure springs ❹ and ❾ with the hooks Ⓒ and Ⓓ respectively (Fig. A).
- When installing the T loading gear (L, R) ASS'Y ❸ and ❽, ensure that they are firmly fit on the axles Ⓔ and on the loading bosses Ⓕ.
- When installing the T loading gear (L, R) ass'y ❸,❽, align register marks and have teeth engaged. (Fig. A)

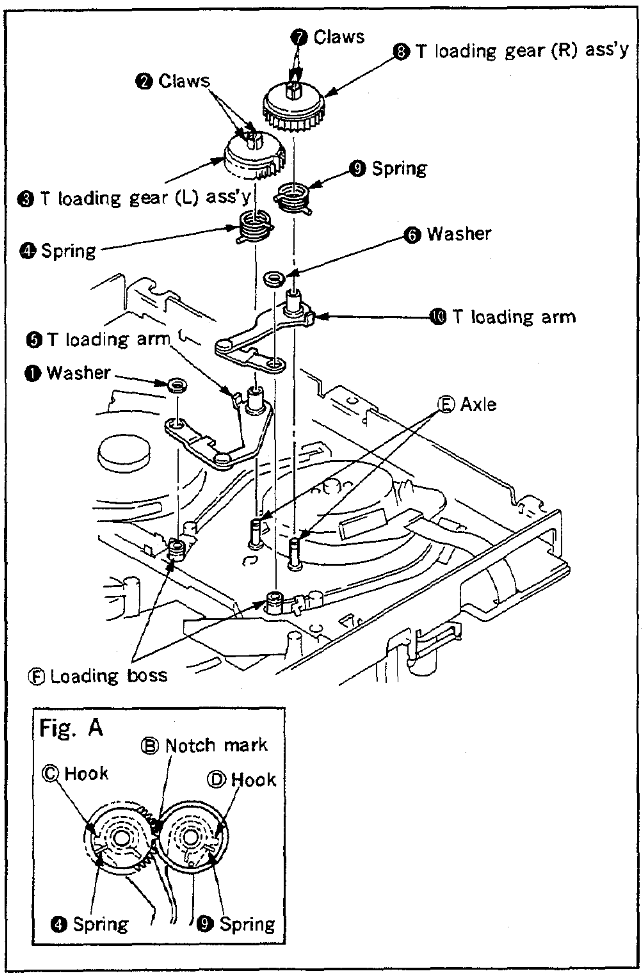

❼ Claws
❽ T loading gear (R) ass'y
❷ Claws
❾ Spring
❸ T loading gear (L) ass'y
❹ Spring
❻ Washer
❿ T loading arm
❺ T loading arm
❶ Washer
Ⓔ Axle
Ⓕ Loading boss
Fig. A
Ⓑ Notch mark
Ⓒ Hook
Ⓓ Hook
❹ Spring
❾ Spring

Fig. 3-24

# 4. ADJUSTMENT

## 4-1. TAPE PATH ADJUSTMENT

The "Tape path" refers to the route of the tape from the supply reel disk to the take-up reel disc via the video heads. Each component part of the tape transport system, particularly the surface of parts which make direct contact with the tape must always be kept clean, free of dust, oil, scratches and so forth.

The tape path system is factory preadjusted. When parts of the tape transport system are replaced, be sure to make the required adjustments as precisely as possible in order to ensure stable tape transport.

### 4-1-1. Tension Arm Position Adjustment (Fig. 4-1)

**Purpose:** In order to stabilize the contact of the video head with tape, the tension of tape delivered is kept almost constant.

**[Adjustment method]**

1) Remove the FL ass'y, complete threading without inserting a cassette tape, and place the set in the specified mode (Section 1-3).
2) For adjustment in PLAY mode, first loosen the screw ❶. Then use a screwdriver to bend Ⓐ part in the direction of arrow Ⓑ, and adjust so that the spacing between the chassis hook and the tension arm is 0.5mm. After this, tighten the screw ❶.
3) For adjustment in REV mode, unplug the power cord and turn the power. Then, place the gear plate in between the S and T reel tables. Use a screwdriver to bend Ⓒ part in the direction of arrow Ⓓ, and adjust so that the spacing between the chassis hook and the tension arm is 4mm.

**Note:** If the quantity of return is too small, Ⓑ part is lessened. Do not bend part Ⓑ excessively.

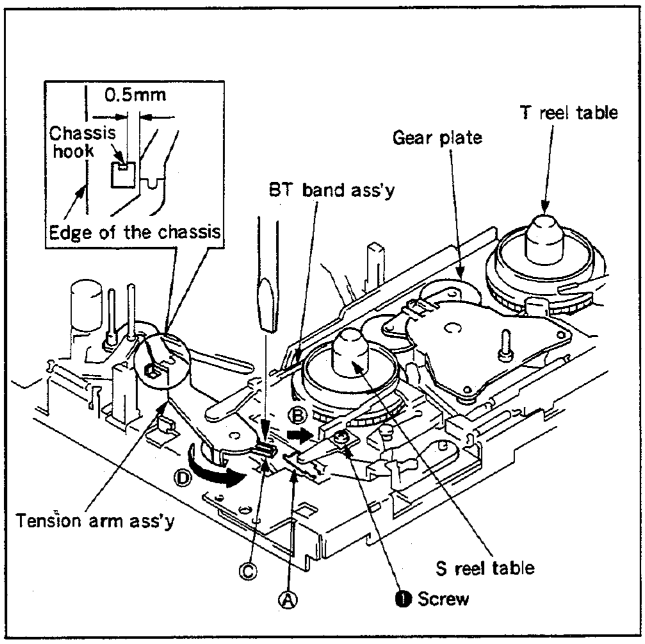


Fig. 4-1

### 4-1-2. ACE Head Tilt Adjustment (Rough) (Fig. 4-2)

| | |
|---|---|
| Mode | Stop |
| Measuring instrument /jig | Master plane<br>Reel disk height jig |
| Adjusted locations | ACE head, Tilt adjustment screw |

**[Adjustment method]**

1) Remove the FL ass'y, complete threading without inserting a cassette tape, and place the set in the specified mode (Section 1-3).
2) Mount the master plane, then put the reel disk height jig by positioning it to the ACE head.
3) Position the reel disk height jig to the part Ⓐ of the ACE head, then turn the tilt adjustment screw so as to make the head vertical.

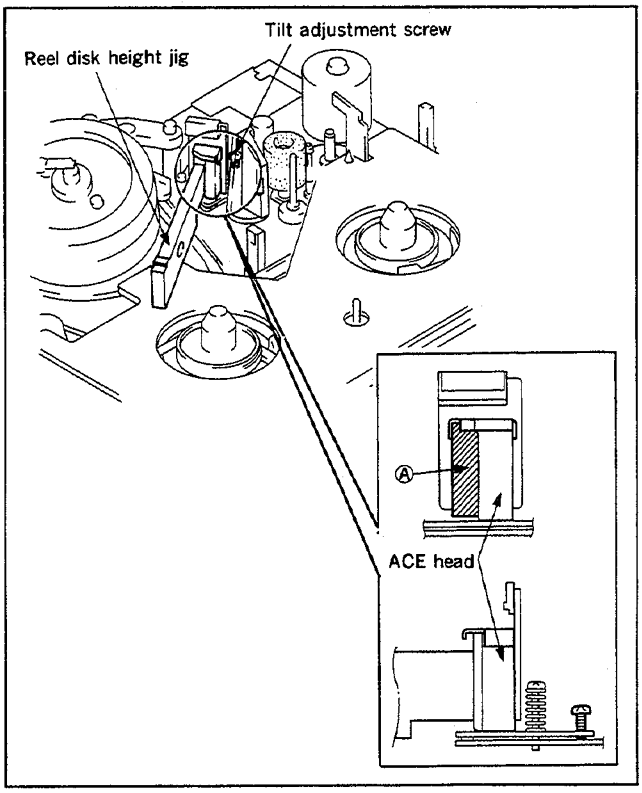


Fig. 4-2

### 4-1-3. ACE Head Height Adjustment (rough) (Fig. 4-3)

| | |
|---|---|
| Mode | Playback |
| Measuring instrument /jig | Blank tape |
| Adjusted locations | ACE head |

**[Adjustment method]**

1) Remove the FL ass'y, complete threading without inserting a cassette tape, and place the set in the specified mode (Section 1-3).
2) Set a blank tape and allow it to run, then adjust the spacings from the upper and lower ACE heads to tape edges so that the ratio of Ⓐ : Ⓑ=1 : 1.5.

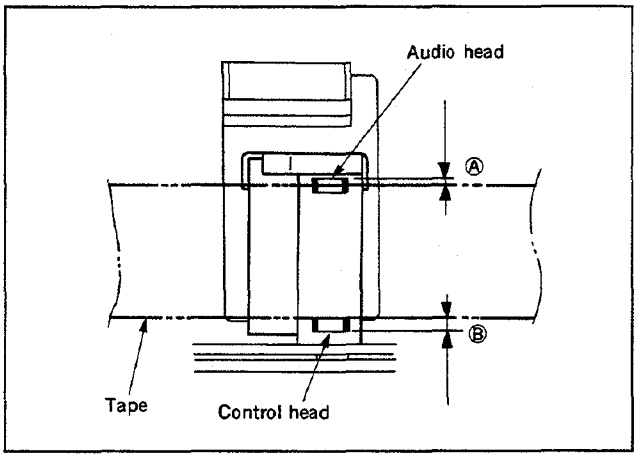


Fig. 4-3

### 4-1-4. Tension Torque Check

**Purpose:** To check tension torque and application force acting to the tape takeup and moving parts, which is necessary to ensure that the tape path is smooth and that the basic perfermance of the VTR is satisfied.

If the tape path is not smooth and/or the tape speed is not correct, this check should be performed.

| | |
|---|---|
| Mode | Each mode of operation with torque tape inserted |
| Measuring instrument /jig | NTSC VHT-063S torque tape<br>PAL VHT-066S torque tape<br>NTSC VHT-404S torque tape<br>PAL VHT-404S torque tape |

| Item | Torque tape used | VTR mode of Operation | Reel to be measured | Measurement Value |
|---|---|---|---|---|
| Playback torque | NTSC VHT-063S<br>PAL VHT-066S | Playback | Takeup reel | 100±30g•cm |
| Back tension torque | NTSC VHT-063S<br>PAL VHT-066S | Playback | Supply reel | 47.5±12.5g•cm |
| REV torque | NTSC VHT-404S<br>PAL VHT-404S | REV | Supply reel | 165±25g•cm |
| CUE torque | NTSC VHT-404S<br>PAL VHT-404S | CUE | Takeup reel | 115±45g•cm |

**Note:** Be sure to rotate each torque tape by the minimum of one turn, and read the value at the center portion between the maximum and minimum deflections.

### 4-1-5. T, S Reel Brake Measurement (Fig. 4-4)

| | |
|---|---|
| Mode | Each mode without inserting a cassette tape |
| Measuring instrument /jig | Torque gauge<br>Torque gauge adapter |

**[S reel brake measurement method]**

1) Turn the power ON, select the fast forward mode, and press the STOP button.
2) Fix both torque gauge and torque gauge adapter to the S reel table.
3) Turn clockwise and check that the torque brake is 200g•cm or more.
4) Turn counterclockwise and check that the torque brake is 80 to 170g•cm.

**[T reel brake measurement method]**

1) Select the rewind mode, and press the STOP button.
2) Fix both torque gauge and torque gauge adapter to the T reel table.
3) Turn clockwise and check that the torque brake is 80 to 170g•cm.
4) Turn counterclockwise and check that the torque brake is 200g•cm or more.
5) Remove both torque gauge and torque gauge adapter.
6) Select the playback mode, then pull out the power cord to run the power OFF.
7) Perform item 2) and check that the torque brake in each of clockwise and counterclockwise directions is 60g•cm±20g•cm.

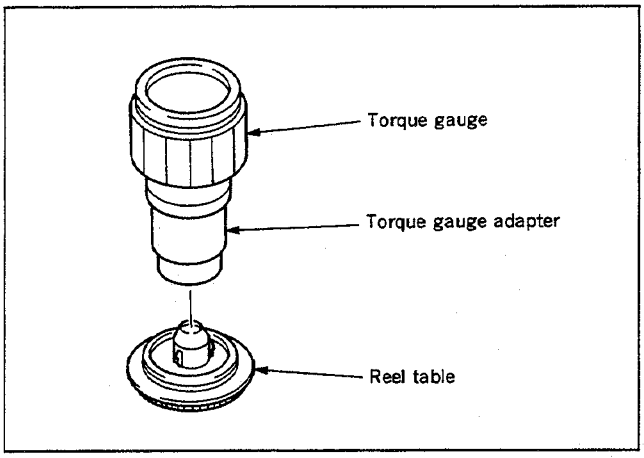


Fig. 4-4

### 4-1-6. L Block (L, R) Ass'y Position Adjustment (Fig. 4-5)

**[Adjustment method]**

1) Push the L block (L, R) assemblies in the direction of arrow Ⓐ until they are butted to stop.
2) Push the L block (L, R) assemblies in the direction of arrow Ⓑ and tighten two screws firmly.

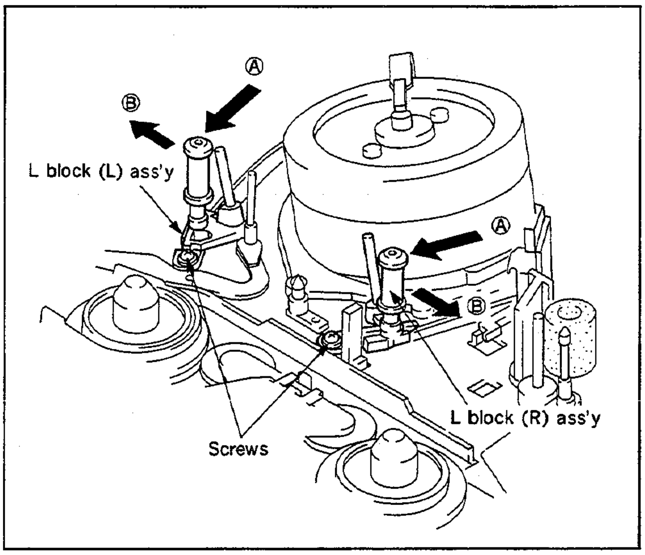


Fig. 4-5

### 4-1-7. Roller Post (L, R) Height Adjustment (Fig. 4-6)

| Mode | Playback |
|---|---|
| Measuring instrument | HiFi alignment tape (HiFi 400Hz) |
| Measuring point | CH-1 : RF pin of connector PB for RF board check<br>CH-2 : SWP pin of connector RF for RF board check |
| Adjustment locations | Roller post height adjustment screw |

**[Adjustment method]**

1) Tracking (playback): Turn off Auto Tracking, and set to the center position (by pressing the tracking buttons ▽ and △ simultaneously).
(When performing this adjustment after replacing the drum, place Tracking in the position where the RF output is at maximum.)
2) Fully tighten the height adjustment screw and slowly loosen the screw to adjust so that the waveform of the RF output is flat.
3) Tracking buttons (playback): Alternately press ▽ and △.
4) Confirm that drops observed in the RF output are equal at its lead and trail.

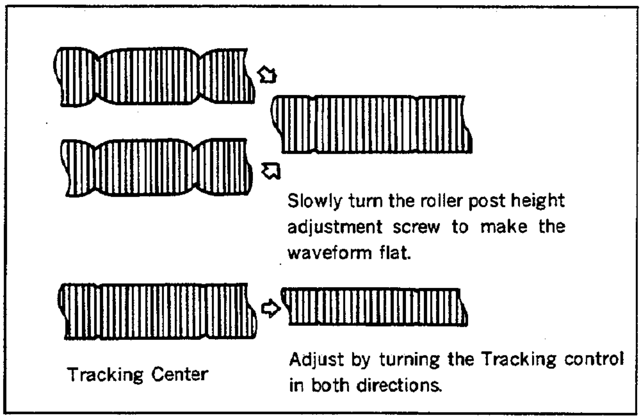

Slowly turn the roller post height adjustment screw to make the waveform flat.
Tracking Center
Adjust by turning the Tracking control in both directions.

Fig. 4-6

### 4-1-8. ACE Head Tilt Adjustment (Precision) (Fig. 4-7)

| Mode | Playback |
|---|---|
| Signal | Alignment tape (JVC-MH-1 1kHz) |
| Measuring instrument /jig | Oscilloscope |
| Measuring point | Audio output terminal |
| Adjustment locations | Azimuth adjustment screw<br>Height adjustment screw<br>Tilt adjustment screw |

**[Adjustment method]**

1) While in FWD mode, adjust so that there is no curl or lift on the lower tape guide flange by using the azimuth adjustment screw.
2) In alternate adjustments, slightly adjust the azimuth, height so that the audio output is maximized and that is waveform is made flat (minimized in fluctuation).

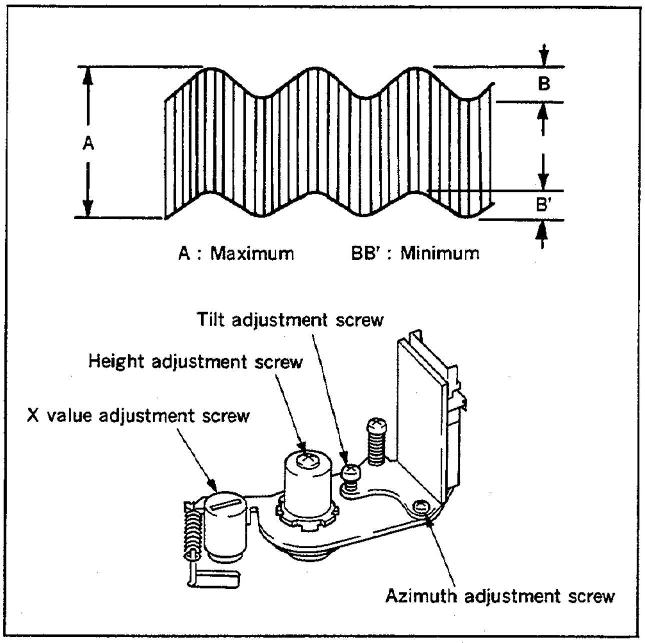

A
B
B'
A : Maximum
BB' : Minimum
Tilt adjustment screw
Height adjustment screw
X value adjustment screw
Azimuth adjustment screw

Fig. 4-7

### 4-1-9. X-Value Adjustment

**Purpose:** To assure compatibility with other VTR's.

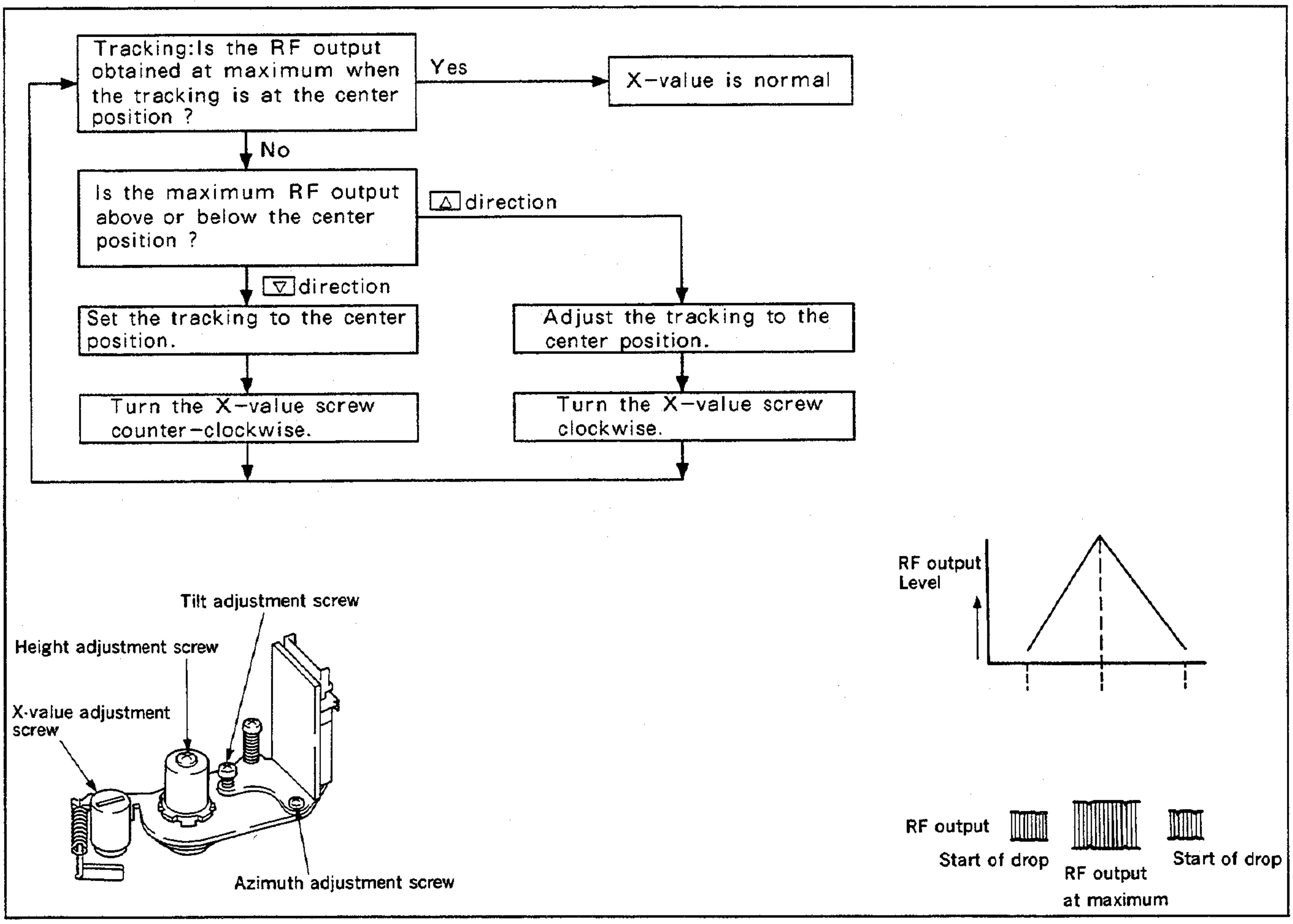
**Note:** Before performing this adjustment, Tracking Preset Adjustment must be always performed. (Refer to the Service Manual.)
Turn off Auto Tracking and set to Manual mode.

| | |
|---|---|
| Mode | Playback |
| Signal | HiFi alignment tape (HiFi 400Hz) or alignment tape (JVC-MH-1 1kHz) |
| Measuring instrument /jig | Oscilloscope |
| Measuring point | CH-1 : Pin RF of connector PB for RF board check<br>CH-2 : SWP pin of connector RF for RF board check<br>(Observe on the CHA head.) |
| Adjustment locations | X-value adjustment screw |

**[Adjustment method]**

○ Adjustment by HiFi alignment tape

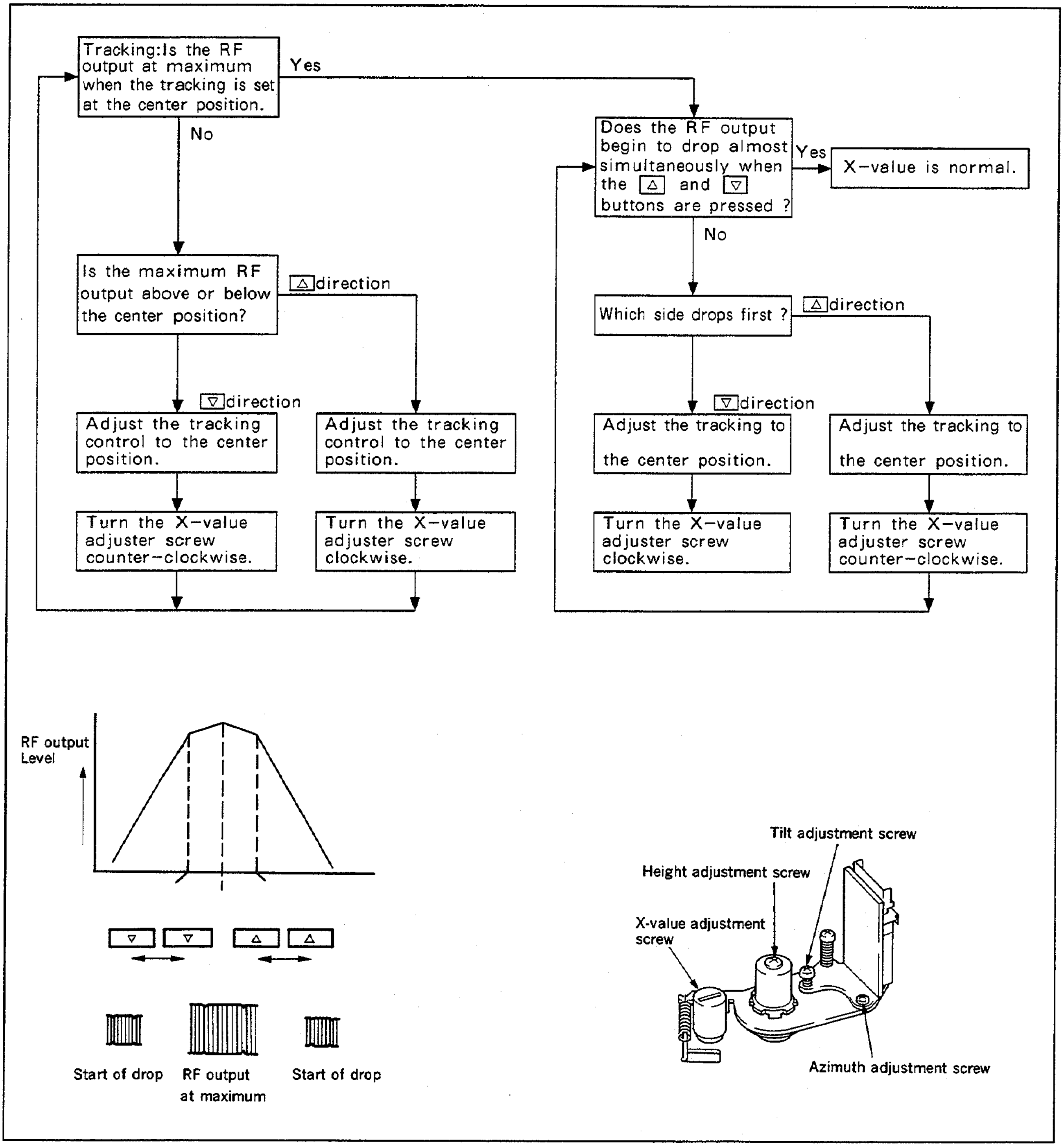
When the tracking is set at the center position (by pressing the ▽ and △ keys simultaneously), adjust the RF output to maximum.



Tracking:Is the RF output obtained at maximum when the tracking is at the center position ?
Yes
X-value is normal
No
Is the maximum RF output above or below the center position ?
△ direction
▽ direction
Set the tracking to the center position.
Adjust the tracking to the center position.
Turn the X-value screw counter-clockwise.
Turn the X-value screw clockwise.
Tilt adjustment screw
Height adjustment screw
X-value adjustment screw
Azimuth adjustment screw
RF output Level
RF output
Start of drop
RF output at maximum
Start of drop

Fig. 4-8

○ Adjustment by Alignment tape (JVC-MH-1 1kHz) (Fig. 4-9)
Adjust the X-value adjuster screw so that maximum RF output is obtained and also that the RF output drops to the same position on pressing the respective ▽ and △ buttons while the tracking is set at the center position.



Tracking: Is the RF output at maximum when the tracking is set at the center position.
Yes
No
Does the RF output begin to drop almost simultaneously when the △ and ▽ buttons are pressed ?
Yes
X-value is normal.
No
Is the maximum RF output above or below the center position?
△direction
▽direction
Adjust the tracking control to the center position.
Adjust the tracking control to the center position.
Turn the X-value adjuster screw counter-clockwise.
Turn the X-value adjuster screw clockwise.
Which side drops first ?
△direction
▽direction
Adjust the tracking to the center position.
Adjust the tracking to the center position.
Turn the X-value adjuster screw clockwise.
Turn the X-value adjuster screw counter-clockwise.
RF output Level
▽
▽
△
△
Start of drop
RF output at maximum
Start of drop
Tilt adjustment screw
Height adjustment screw
X-value adjustment screw
Azimuth adjustment screw

Fig. 4-9

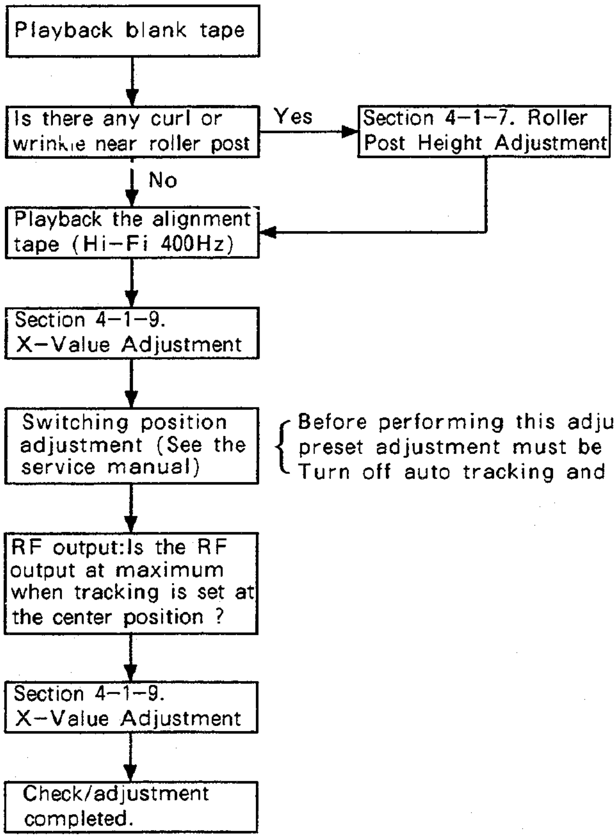
### 4-1-10. Adjustments after Replaceing the Drum (Video head)

**Purpose:** Co-relative height, X-value and other factors of the drum will deviate from those of the guide roller. If the drum in replaced properly, these deviations are extremely small.

**Precaution:** Turn off the auto tracking and set the manual tracking mode.

| | |
|---|---|
| Mode | Playback |
| Signal | Alignment tape (JVC-MH-1 1kHz), blank tape |
| Measuring instrument /jig | Oscilloscope |
| Measuring point | CH-1 : PB RF pin of connector for RF board check<br>CH-2 : RF SWP pin of connector for RF board check |
| Adjustment locations | Roller post (Section 4-1-7)<br>X-value (Section 4-1-9)<br>Switching position (See the Service Manual)<br>Before performing this adjustment, Tracking Preset Adjustment must be always performed. Turn off Auto Tracking and set to Manual mode. |

**[Adjustment method]**


Playback blank tape
Is there any curl or wrinkle near roller post
Yes
Section 4-1-7. Roller Post Height Adjustment
No
Playback the alignment tape (Hi-Fi 400Hz)
Section 4-1-9. X-Value Adjustment
Switching position adjustment (See the service manual)
RF output: Is the RF output at maximum when tracking is set at the center position ?
Section 4-1-9. X-Value Adjustment
Check/adjustment completed.

Before performing this adjustment, tracking preset adjustment must be always performed. Turn off auto tracking and set to manual mode.

### 4-1-11. RG Post Tilt Adjustment (Fig. 4-10)

1) Take up tape in either playback or CUE mode and then enter REV mode.
2) Slowly tighten the tilt adjustment screw and allow some curl to appear on the exit guide lower flange. Then, slowly loosen the screw until there is not any wrinkle or curl.

### 4-1-12. Regulation Direction Check (Fig. 4-10)

**[Check method]**

1) Play back raw tape and set to the CUE/REV mode. check the following places to see if there is any curl or wrinkle.

| | | | |
|---|---|---|---|
| A | FE head | E | Tape guide |
| B | Entrance roller post | F | Capstan shaft |
| C | Entrance bag unit | G | RG post |
| D | Exit roller post | | |

**Note :** If curl or wrinkle cannot be removed, perform Adjustments from 4-1-6. again.

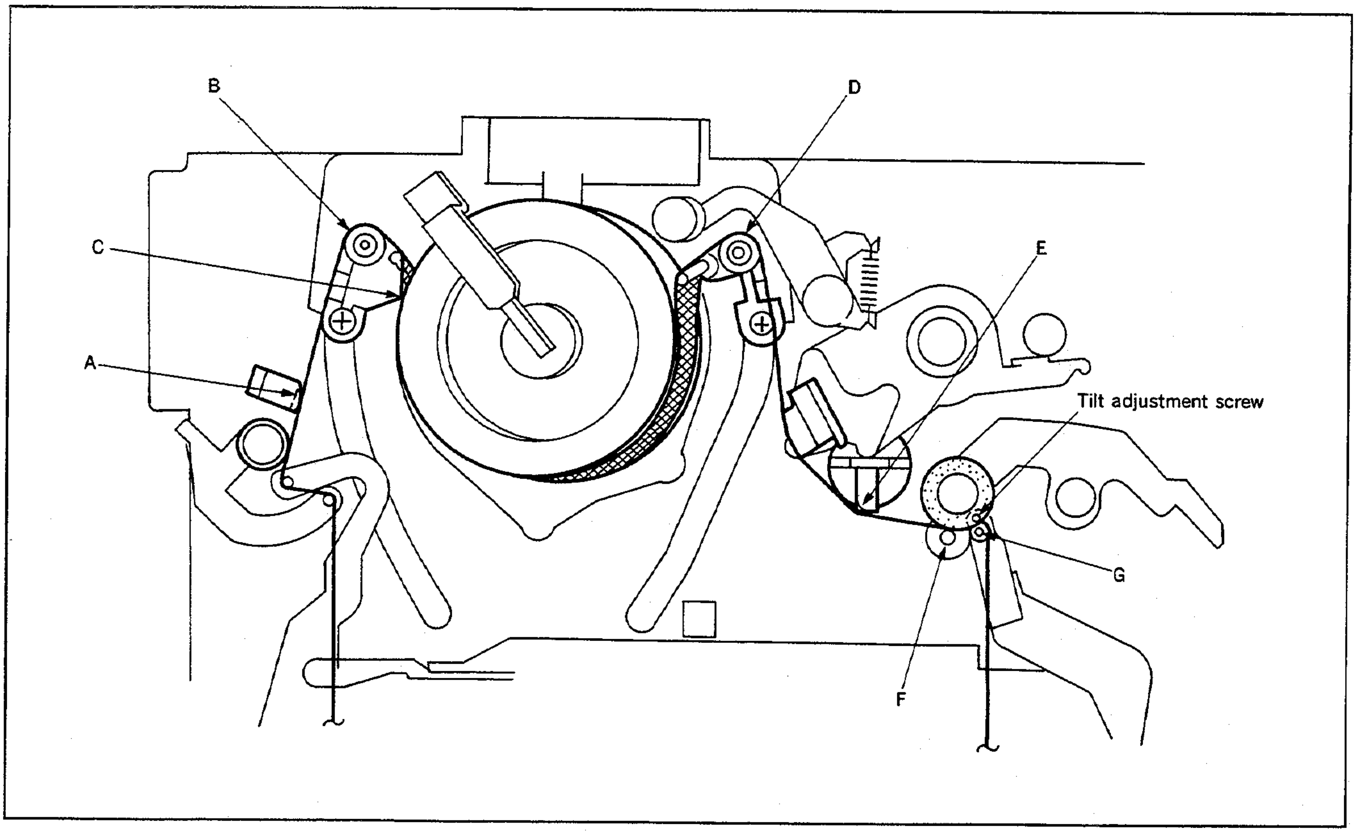


Fig. 4-10

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